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**RESPONSE TO THE "IT DECISION" QUESTIONS
(AND LAC 33:VII.523)
SUBMITTED IN CONJUNCTION WITH
RIVER BIRCH LANDFILL, INC.'S
APPLICATION FOR MODIFICATION OF TITLE V (PART 70)
AIR PERMIT AND APPLICATION
FOR MAJOR MODIFICATION # 7
OF SOLID WASTE PERMIT NO. D-051-6741/P-0321**

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**SUBMITTED BY:
RIVER BIRCH LANDFILL, INC.**

**DATE:
September 19, 2003**

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**Response to the "IT Decision" Questions
(and LAC 33:VII.523)
Submitted in Conjunction with River Birch Landfill, Inc.'s
Application for Modification of Title V (Part 70)
Air Permit and Application for Major Modification # 7 of
Solid Waste Permit No. D-051-6741/P-0321**

I. INTRODUCTION

This response to the "IT Decision"¹ questions is submitted on behalf of River Birch Landfill, Inc. (RBL) in connection with the following applications:

1. RBL's Application for Modification of its Title V (Part 70) Air Permit.
2. RBL's Application for Major Modification #7 of its Solid Waste Permit No. D-051-6741/P-0321.

The "IT Decision" questions answered herein are as set forth in the Solid Waste Regulations, at LAC 33.VII.523. The substance of the questions does not vary from the questions which must be assessed in connection with the requested air permit modification. Accordingly, RBL respectfully requests that the Louisiana Department of Environmental Quality (LDEQ) consider these responses in connection with RBL's applications to modify both its solid waste and its air permits.² This response is formatted such that the preliminary sections provide a summary of the requested permit action (i.e. the effect of and reasons for the requested modification), followed by a statement of

¹ *Save Ourselves, Inc. v. La. Env. Control Comm.*, 452 So.2d 1152 (La. 1984).

² An LPDES (water discharge) permit modification application, necessary to reconcile the facility water permit consistent with the facility expansion for which approval is now sought, will be submitted at a later date. The later submission of the water permit modification application is consistent with the directives of LDEQ Environmental Services Personnel, who asked that the water application be submitted in connection with the facility permit renewal application, which is not yet due. Despite the fact that the water permit modification application has not yet been submitted, environmental impacts related to the effects of the expansion on water quality are addressed herein, to allow a complete assessment of the environmental effects of the expansion proposal.

background information that is highly relevant to a proper analysis of the issues raised by the IT Decision questions. Finally, the specific questions are addressed.³ The primary changes requested by way of the applications for modification are summarized below.

II. SUMMARY OF REQUESTED PERMIT MODIFICATIONS

A. Solid Waste Permit-Major Modification #7

1. *Expansion of Solid Waste Facility:* By way of the requested modification, RBL hopes to achieve a significant expansion of its existing Type I and Type II Solid Waste disposal facility. The primary reason for the expansion is to accommodate the demand for additional landfill capacity, which has been established by an assessment of the specific needs of current RBL customers, as well as a more general analysis of the projected need for disposal capacity in RBL's service area. RBL's expansion plans, which are part of an overall development plan designed to improve the efficiency, economics and environmental protections of solid waste disposal practices in the Greater New Orleans area⁴ are intended to satisfy that demonstrated need. The

³The reader should note that significant changes affecting the analysis conducted herein took effect immediately prior to the submission of the applications which are the subject of this analysis. These changes, discussed below, related to zoning in the area of the existing RBL facility. *For this reason, the submission of this analysis was delayed while the effect of the changes was assessed and set forth herein for LDEQ.* Additionally, included in this analysis is a report on the economic impacts of the expansion. This report was not completed until July 11, 2003.

⁴ As explained in greater detail, *infra*, the proposed expansion is being undertaken in conjunction with a business plan that includes a strategic alliance with Hwy 90, LLC, an entity with ties to RBL and which currently has pending before the LDEQ an application for a Type III (C&D Waste and Wood Waste) Solid Waste disposal facility, which is proposed to be located on the tract of land located on the other side of the existing Jefferson Parish (Kelvin) Landfill from RBL. The arrangement between RBL and Hwy 90, LLC - discussed in some detail in the "IT Decision" response of the Hwy 90, LLC permit application - *contemplates the diversion of all Type III waste from RBL's existing clients, resulting in both economic and environmental*

expansion plans may be summarized as follows:

- a. acquisition of 174 acres of new property;
 - b. vertical expansion from elevation 107' to 197';
 - c. horizontal expansion to increase disposal area from 238 acres to 399 acres;
 - d. increase in volume from approximately 16 million tons to approximately 50 million tons;
 - e. increase in life from 25 years to 50 years;
 - f. construction of a new 28 acre leachate treatment pond;
 - g. expansion of monitoring well system from 15 wells to 24 permanent wells.
2. *A change in weekly disposal rates for various categories of waste:* This change is being made to accommodate normal increases in residential and commercial waste generation, as well as to allow for flexibility in the acceptance of industrial wastes associated with large clean-up jobs which by nature generate large volumes over a short period of time.
 3. *A revision to authorize the installation and monitoring of the permanent monitoring wells on the perimeter of the facility.* This change is being requested to accommodate planned (and already approved) expansion of the landfill to the south, by placement of the permanent wells, rather than temporary wells.
 4. *A revision to increase the days of operation to include Sunday.* This change is being

benefits for the customers and community.

requested to allow operational flexibility and accommodate unusually heavy periods of waste generation/disposal, such as holidays or storm events, and will only be used in the event of such situations.

5. *A revision to allow the use of dual tipping areas.* This change is being requested to allow for greater safety, by segregating large and small vehicles into two areas during periods of heavy traffic.
6. *A revision to the facility operations plan related to asbestos waste.* This change is being made to allow the facility operational plan to conform to OSHA regulations as they are updated by OSHA, and will eliminate the need for modifications in the event OSHA regulations are altered or amended.
7. *Revisions to the facility construction quality assurance plan related to testing for density and permeability.* These changes are being requested as a result of the history of testing conducted to date, which indicates that such extensive testing is unnecessary. Additionally, both Proctor and Attaberg Tests conducted on clay utilized for part of the facility liner assure quality construction. Finally, the requested reduction in the number of density and permeability tests means fewer punctures of the clay liner and fewer opportunities for leachate migration as a result of the creation of these punctures, in the event of failure of the repair/sealing of the test locations.

B. Title V (Part 70) Permit Application

RBL's Title V Permit Modification Application was submitted to address the increased facility size and capacity requested by the solid waste permit modification. The expansion will not, however, result in a significant net emissions increase. Additionally, the application for the air

permit modification reflects emissions before and after the installation and startup of a Landfill Gas Collection and Control System ("LFGCCS"), now scheduled to occur by February 28, 2005. The LFGCCS, which constitutes Maximum Achievable Control Technology ("MACT"), will have significant pollution control benefits and should be considered favorably in the context of the IT Questions analysis, since the permit as granted will require the installation of this technology pursuant to a specified schedule.

A critical issue associated with the air emissions from the expanded facility is the potential development of a landfill gas to energy ("LFGTE") project at the site. The potential LFGTE project, which would virtually eliminate the majority of the air emissions from the expanded RBL facility, is discussed in greater detail below.

In summary, the combined effect of the pending applications is to expand the existing RBL facility and to modify the facility air permit to be consistent with the requested increase in facility size. Additional changes to be affected by the Solid Waste Permit Modification are related to weekly disposal capacity, operating hours, operational plan and construction quality assurance plan. Significantly, there is no change in facility service area and no significant change in technology utilized at the facility (with the exception of the installation of an environmentally beneficial gas collection and control system).

II. BACKGROUND ISSUES AFFECTING THE IT QUESTIONS ANALYSIS

Analysis of the IT Questions in this case should be undertaken after consideration of a number of background facts which are highly relevant to the IT Questions analysis. These issues include: (a) previous LDEQ permit decisions related to the IT Questions analysis undertaken in connection with the RBL facility; (b) recent zoning changes affecting the area of the expansion,

which are unique in that they establish a zone specifically for solid waste related activities; and (c) unique location characteristics which significantly reduce the risks which may result from the proposed expansion. Those issues are summarized here, and each will be discussed in greater detail below, in the context of specific responses to the IT Questions.

A. Historical/LDEQ Decisions on the "IT Questions" Analysis for the RBL Facility.

Concerning the basic features and location of the RBL facility, the prior IT Questions analyses conducted by the LDEQ warrant emphasis. In these prior analyses, the LDEQ determined that the potential and real adverse environmental affects of the facility had been avoided to the maximum extent possible and that there were no alternative sites, technologies or projects which would provide more protection to the environment than the proposed site without unduly curtailing non-environmental benefits. Particular attention should be paid to the District Court's decision in In the Matter of River Birch Incorporated Type I and II Solid Waste Landfill Number 441,758; Division "N"; 19th Judicial District Court, Parish of East Baton Rouge, State of Louisiana, in which the validity of the LDEQ's initial IT Questions analysis was upheld. Attention should also be paid to the fact that subsequent LDEQ decisions addressing major modifications at the facility (and particularly the LDEQ's July 1, 1999 decision approving Major Modification No. 5, which resulted in the facility configuration most similar to its present form) found that the potential and real adverse environmental affects of the facility had been avoided to the maximum extent possible and that there were no alternative sites, projects or technologies that would provide greater protection to the environment than the facility as proposed without unduly curtailing non-environmental benefits. These decisions are, as previously noted, final and not subject to further (or initial) judicial review.

Although these prior decisions provide a sound starting point for the IT Questions analysis required in the case of the present applications/modifications, RBL is mindful of the fact that the LDEQ, as Primary Public Trustee of the Environment, must remain vigilant and assess these issues anew in connection with the currently pending applications. Accordingly, the following information and analysis is provided, but should be considered in light of the prior decisions.

B. Recent Zoning Changes Affecting the Current Location of RBL and the Proposed Expansion Area

On February 26, 2003, the zoning for the area on which the RBL landfill is located, and the area of this proposed expansion, was changed.⁵ The area is now zoned as an "M-4" district and is "...intended solely for industrial activities relating to or involving waste collection, handling and disposal facilities. The purpose of this district is to allow the normal operation of state permitted landfills and other waste handling, recycling and disposal establishments under such conditions as will protect adjacent land use".⁶

The change which resulted in the creation of the "M-4 Zoning District" was implemented after careful study of the issue by the Parish. An extensive study was conducted for the Jefferson Parish Planning Department by Coastal Engineering and Environmental Consultants, Inc. in cooperation with the University of New Orleans Real Estate Market Data Center. The report generated by this study, entitled "WAGGAMAN AREA ZONING STUDY, A Zoning Study of Lands Located in the Vicinity of the Jefferson Parish Sanitary Landfill, Waggaman, Louisiana,"

⁵ The ordinance affecting the zoning change is attached hereto as Exhibit "A" and is hereinafter referred to as the "Zoning Ordinance".

⁶ Section 40-612 of the Jefferson Parish Code of Ordinances.

(hereinafter the "Zoning Study") was completed in January 2003.⁷ The approximately 3219.5 acre study area located in Township 13 South, Range 22 East, Southeastern Land District of Louisiana, contains two operating municipal solid waste landfills (RBL and the Jefferson Parish Sanitary Landfill), as well as the proposed location for the Highway 90, LLC Construction and Demolition Debris landfill.⁸ Incorporated within the Zoning Study was an economic needs analysis for solid waste landfills on the Westbank of Jefferson Parish, conducted by Dr. Wade Ragas, Director, University of New Orleans, College of Business Real Estate Market Data Center and entitled "Forecast of Solid Waste for Type I Landfills in Jefferson Parish, LA, 2002 to 2050" (hereinafter "UNO Waste Forecast").

The Zoning Study recommended that the study area be "rezoned to allow for landfill expansion and to create a transitional zoning district to buffer residential uses from landfill operations."⁹ The recommendation, which was adopted by the Parish, was based in part on the UNO Waste Forecast which suggested that "most of the land within the study area would be needed for landfill expansion within the next 50 years."¹⁰ A specific finding noted that the study area, with its favorable soil conditions and transportation infrastructure, would be sufficient to support regional waste disposal needs in the New Orleans metropolitan area for the next 25 to 50 years.¹¹

⁷ A copy of the Zoning Study is attached as Exhibit "B".

⁸ As explained in greater detail below, Hwy 90, LLC has entered into a strategic alliance with RBL which contemplates the diversion of Type III waste from RBL to the Hwy 90 C&D facility, an arrangement with significant economic and environmental benefits.

⁹ See Exhibit "B" at page 1 (Study Overview).

¹⁰ *Id.*

¹¹ *Id.* at p.3, Finding No. 11.

The zoning changes in the area of RBL are unique in that the area is zoned specifically for waste disposal activities. The zoning change was based on a thoughtful assessment of regional disposal capacity needs and incorporated the concepts of transitional uses and buffer zones to provide for orderly development and protection of residential areas. RBL is aware of no other situation, within its entire service area (or within the entire state for that matter) where an area has been specifically zoned for solid waste disposal activities with transitional buffer zoning incorporated as a means of ensuring that future waste disposal needs are met while protecting residential areas. This zoning decision was made by local land use authorities - those best suited to determine the appropriateness of a given land use, based on an expert assessment of regional needs, and addresses many of the elements which the LDEQ - as Primary Public Trustee of the Environment - is required to assess under La. Const. Art. IX, §1 (1974). The changes made as a result of the Zoning Study are sometimes hereinafter referred to as the "Zoning Change".

C. Specific Location Characteristics Relevant to the IT Questions Analysis

The location of RBL and the proposed expansion area have a number of extremely favorable characteristic which warrant review and emphasis prior to formal consideration of the IT Questions analysis. Such favorable location characteristics impact the questions of alternative sites, the cost/benefit analysis for the facility expansion and the issue of mitigating measures, as explained in greater detail below.

- a) The proposed expansion area is located adjacent to compatible land uses (i.e. in an area already utilized for waste disposal). In fact, the expansion area is a triangular tract of land that has existing solid waste disposal activity on 2 of its 3 sides [the existing RBL on one side and the now closed Greater New Orleans Landfill

("GNOL") on the other]. The result of this location characteristic is that, unlike any other potential alternative site for the expansion, the adverse impacts to surrounding property usually associated with disposal activity is nominal, since surrounding property is already used for solid waste disposal. RBL is unaware of any other location within its entire service area (or the entire state for that matter) that has the favorable location characteristic of being sandwiched between two existing solid waste disposal facilities.

- b) There are no potable water aquifers in the area which could be jeopardized in the event contaminants or leachate escaped from the landfill. According to J.R. Rollo, 1966 ("Groundwater Resources of the Greater New Orleans Area, Louisiana"; Water Resources Bulletin No. 9, Louisiana Geological Survey and Louisiana Department of Public Works), there are no freshwater aquifers in the vicinity which would yield potable water, as the aquifers in the 200, 400 and 700 ft. sands all have chloride contents in excess of 250 ppm.
- c) There are no "environmentally sensitive" areas in proximity to the proposed expansion area. (See Volume I, Attachment "C" of RBL's Supplement to Major Modification #7: letters/correspondence from Department of Culture, Recreation and Tourism, Department of Wildlife and Fisheries, and U.S. Fish and Wildlife Services, indicating no historic sites, recreation areas, parks, wildlife management areas or refuges, scenic rivers, endangered species, threatened species or critical habitat within 1000 feet of the proposed location).
- d) The proposed expansion area is near emergency response service providers which

have emergency response capabilities which satisfy Sections 472 and 473 of the Life Safety Code. (See Volume I, Attachment "F" of RBL's Supplement to Major Modification #7 - letters from West Jefferson Medical Center and the Herbert Wallace Memorial Volunteer Fire Department.)

- e) The proposed expansion area is not on or within 1000 feet of an aquifer recharge zone.
- f) The geology at the proposed expansion location is comprised of clays and silty clays that should inhibit the potential migration of contaminants in the unlikely event of a release of leachate.
- g) The hydrology of the expansion area is uniquely suited to landfill activity, since groundwater has an "upward" flow that would prevent the spread of groundwater contamination in the unlikely event of a release of leachate.
- h) The expansion project is uniquely situated in an area with all of the characteristics necessary for maximizing the potential for successful implementation of a LFGTE project. As explained in greater detail below, an assessment of the proposed RBL expansion by a member of the EPA's Landfill Methane Outreach Program ("LMOP") indicates that the two characteristics necessary for a successful LFGTE project - a large supply of landfill gas and nearby potential end users of the gas - are present at the project area. In fact, the project area is one of the best suited areas in the entire country for successful implementation of a LFGTE project, due to its proximity to the Jefferson Parish Landfill (with which RBL's landfill gas could be combined), the overall landfill capacity in the area and a specific potential end user

of the landfill gas. The potential end user of the landfill gas (the identity of which is confidential, pursuant to contract) is currently conducting a feasibility study of the LFGTE project, in conjunction with the LMOP member, and has the capacity to take all of the landfill gas generated by Jefferson Parish Landfill and the expanded RBL. Thus, a LFGTE project including the expanded RBL is not just a theoretical possibility - it is a very real prospect that would only be enhanced if the requested expansion was granted, since the supply of landfill gas available for the project would be enhanced. The environmental benefits that would flow from successful implementation of a LFGTE project (discussed in greater detail below) are, simply put, incredible. The location characteristics that make such a project possible should, accordingly, be considered favorably in the context of the IT Questions analysis for the expansion.

In summary, the LDEQ's prior favorable assessment of the "IT Questions" in the specific context of RBL, the recent Zoning Change, specifically designating the area of the proposed expansion solely for waste related activities (and the underlying studies providing the basis for this zoning) and the numerous favorable site characteristics are all extremely significant in the context of the IT Questions Analysis.

IV. ANALYSIS

With the foregoing preliminary issues addressed, RBL provides specific responses to the questions set forth in Section 523.

A. Have the Potential and Real Adverse Environmental Effects of the Facility Been Avoided to the Maximum Extent Possible?

Yes. Taken as a whole, the mitigating measures incorporated into the design and physical configuration of the facility, the operational and institutional controls to be utilized at the facility and the characteristics of the expansion site combine to demonstrate that the potential and real adverse environmental effects of the facility modifications, as proposed, have been avoided to the maximum extent possible.

In addressing this question, it is necessary to first list those potential adverse environmental effects that may reasonably be expected to result from the operation of the expanded facility. These potential and real adverse effects include groundwater impacts, surface water impacts, air quality impacts, aesthetic impacts (visual/noise), wetlands impacts, safety risks (including traffic risks, airport/wildlife risks, and hazardous materials incidents), adverse impacts to surrounding property values, adverse impacts to "sensitive environmental areas", adverse impacts from flooding and miscellaneous adverse impacts from the various minor modifications requested (e.g., potential adverse impacts from expanding allowable operation time to include Sunday, during times of short-term increased demand). In demonstrating that these potential and real adverse environmental effects have been avoided to the maximum extent possible, it is necessary to consider certain aspects of facility location and facility configuration/operation which act to reduce or avoid adverse impacts.

In the previous decisions of the LDEQ (and the court reviewing LDEQ's decision) it was recognized that the adverse impacts of the RBL facility had been avoided to the maximum extent possible. The potential for such adverse environmental impacts to occur does not change

(qualitatively) in any significant respect as a result of the requested expansion and, accordingly, these are the primary impacts addressed herein.

1. Groundwater Impacts:

Potential impacts to groundwater are perhaps the greatest risk posed by municipal solid waste landfills. In the context of the expanded RBL, there are a number of factors which should be considered as supporting the contention that this potential adverse impact has been minimized to the maximum extent possible.

First, the location characteristics of the expansion area are of paramount importance. Unlike many other landfill proposals in the state which have generated significant controversy, there are no potable water aquifers to be contaminated in the unlikely event of leachate migration from RBL. As previously mentioned, J.R. Rollo, 1966 ("Groundwater Resources of the Greater New Orleans Area, Louisiana"; Water Resources Bulletin No. 9, Louisiana Geological Survey and Louisiana Department of Public Works), indicates that there are no freshwater aquifers in the vicinity which would yield potable water, as the aquifers in the 200, 400 and 700 ft. sands all have chloride contents in excess of 250 ppm. The area is not an aquifer recharge zone (See response to LAC 33:VII.523.C.1.d.). The area is not in a seismic impact zone and, hence, faulting does not pose the risk of a conduit for migration of contaminants. (See response to LAC 33:523.D.1). Additionally, the "upward" flow of groundwater in the area of the expansion would mitigate any harms in the event a release of leachate were to occur. Finally, the Geotechnical Investigation conducted by Eustiss Engineering for RBL's permit modification application (See Volume II, Parts I and V of RBL's Supplement to Major Modification #7) indicates the presence of massive, uniform strata of low permeability soils which would inhibit the migration of leachate in the event of a release.

Clearly, the site characteristics act to minimize, to the maximum extent possible, threats to groundwater.

Design characteristics are also important and include the required liner, leachate collection and groundwater monitoring systems that all act to reduce the risk of adverse groundwater impacts. (See response to LAC 33:VII..521.F.4.). In regard to the liner system, particularly, attention should be paid to the innovative alternate liner system that has already been approved for the existing RBL and which will also be utilized at the expansion site. Rather than the regulatory requirement of three (3) feet of recompacted clay with the required permeability co-efficient of, overlain by a 60 mil HDPE liner, the RBL liner system incorporates a one foot layer of recompacted clay¹², followed by a 40 mil HDPE liner bonded to a geosynthetic clay product ("GUNDSEAL", provided by GSE Lining Technology, Inc.), followed by a 60 mil HDPE liner, a geo-net (for leachate collection) and 1 foot of sand. Data evidencing the qualities of the Gundseal product, as compared to re-compacted clay, is attached as Exhibit "C". As noted in this material, as to the all important issue of water flux, "...it is quite evident that the Gundseal geosynthetic clay liner performs much better than a compacted clay liner." This alternate liner system also provides an extremely important "self-healing" function, which would not otherwise be present if the ordinary liner system required by the regulations were used. In other words, in rare cases where the 60 mil HDPE liner may be punctured by a sharp object in the waste materials, the Gundseal product swells and forms a barrier to inhibit leaking of leachate through the puncture in the primary liner system. Re-compacted clay does not have this quality.

¹²It should be emphasized that the natural soils beneath the one foot clay layer are themselves of very low permeability. In fact, the clays beneath the RBL facility and expansion area have a natural permeability coefficient sufficient to satisfy the regulatory three foot re-compacted clay layer permeability requirement.

Thus, the alternate liner system, in conjunction with the superior low permeability soils at the site, acts to minimize, to the maximum extent possible, potential adverse impacts associated with groundwater contamination.

A liner system is also used for ditches in the expansion area, further minimizing risks to groundwater. The permanent interior ditch for the collection of run-off/run-on in the expansion area will include three feet of re-compacted clay as well as a 60 mil HDPE liner, thereby further minimizing the risk of groundwater contamination. This will be the same liner system used in the expanded treatment pond. (See response to LAC 33:VII.521.C.1.b.). It should be noted that the alternate liner system discussed above will **not** be used in the ditch or the treatment pond, since the conditions are different in these areas and the traditional liner is deemed to be more effective under these conditions. Particularly, the amount of pressure exerted on the liner in the pond and ditch will vary, depending on the water levels. Additionally, the pond and ditch will be subjected to persistently wetter conditions than the bottom of the landfill cells. Under these conditions, the traditional liner system is deemed to be more effective.

It should also be noted that the approval of the expansion will act as a safeguard against groundwater contamination from other, pre-existing threats to groundwater. First, the westward expansion of monitoring wells and monitoring capabilities that will occur in the event the requested expansion is approved will provide additional information related to any potential impacts to groundwater which may be attributed to the now closed GNOL. This data could help the LDEQ formulate any necessary response to contaminants that may emanate from GNOL. Second, the expansion will result in the existing Jefferson Parish Sludge Lagoons being excavated and disposed of in the environmentally protective confines of the landfill, rather than the unlined pits where the

sludge currently resides. If the expansion is not approved, neither of these protective measures for groundwater will be implemented.

Finally, the impact of operational plans on risks to groundwater should be taken into consideration. The facility waste acceptance plan ("WAP") will prevent the acceptance of unauthorized wastes, the acceptance of which could increase risks to groundwater. These include, for example, a prohibition on the acceptance of waste which is characterized as hazardous, as well as a prohibition on the acceptance of waste with free liquids.

Taken as a whole, the location, design and operational characteristics of the facility, as expanded, will act to minimize, to the maximum extent possible, any adverse impacts to groundwater. This conclusion is consistent with the previous decisions of both the LDEQ and the court which upheld the LDEQ's decision.

2. Surface Water Impacts:

Surface water impacts that may occur as a result of the operation of the expanded facility include spills, run-off and, of course, direct discharges from the facility itself.

Nothing has changed since the initial LDEQ decisions approving the existing RBL facility, with the exception of plans for the addition of a larger treatment pond, as operations move to the west into the expansion area, as well as a change in the number and location of outfalls for the LPDES permit and a modification of the chlorides limit for the effluent from the facility.

Concerning the latter issue, since the time of the initial permitting, RBL has requested an increase in the chloride limits for its water discharge, which was necessitated by the naturally occurring high concentrations of chlorides in both groundwater and the receiving waters (Saul's Canal), believed to be associated with the historic presence of brackish marsh in the area.

Significantly, the requested limit of 850 ppm is lower than the sample results obtained from an upstream location (designated as location S-1 in the data submitted to LDEQ in support of the request for the variance), which showed a chlorides level of 1010 ppm. Because of the high chloride concentration in the receiving waters, the requested increase should have no significant adverse effect on the environment. Thus, no change which would impact the prior IT Questions analysis will be affected by these changes.

The expanded facility will include a number of design, operational and location characteristics that will minimize the potential for adverse impacts to surface waters. First, the facility, as expanded, will not discharge directly into any significant surface water body. The discharge is into Saul's canal, thence into Waggaman Canal, thence into Verret Canal. There are no surface water intakes for drinking water supplies in these water bodies.¹³ These water bodies are not designated as "scenic" nor are they or of any significant aesthetic quality.

In regard to operational characteristics which act to minimize the potential for adverse impacts to surface water, the expanded facility will (like the existing facility) utilize measures to ensure that discharges meet applicable requirements (through discharge monitoring) and will utilize best management practices (such as those contained in the facility spill prevention and control plans and the stormwater pollution prevention plans) to further minimize the potential for adverse impacts.

These practices include the use of secondary containment on fuel tanks, the segregation of

¹³ See "Surface Water Intakes by Parish", available at:
<http://www.deq.state.la.us/evaluations/aeps/swap/appm.htm>

uncontaminated storm water from contaminated storm water and the implementation of practices to minimize the impact of construction activities, as required in the general permit for construction activities.

Finally, the facility design for the expanded landfill area will also act to minimize the adverse impacts to surface water. As with the existing landfill, the expansion area will incorporate design characteristics (perimeter berm, levee and ditch system) that prevent run-on, as well as characteristics that control run-off from the working face of the landfill. (See response to LAC 33:VII. 521.C.1).

Taken as a whole, the location, design and operational characteristics of the facility, as expanded, will act to avoid, to the maximum extent possible, any adverse impacts to surface water.

This conclusion is consistent with the previous decisions of both the LDEQ and the court which upheld the LDEQ's decision.

3. Air Quality Impacts:

The potential adverse impacts to air quality from the expanded facility are no different (in quality) from those that were assessed in the context of the original decision to permit the facility. In fact, the increase in capacity that occurred as a result of the previous facility expansion (Major Modification No. 5) has triggered the requirement of installing a LGCCS that will act to minimize any adverse impacts to air quality that could arise by virtue of the expansion. This gas collection system will be installed in accordance with an already approved schedule of sampling and shall meet the control requirements of 40 CFR 60.752 (b)(2). Significant pollution control benefits will accrue from the installation and use of the LGCCS. In fact, the gas collection and control system required by 40 CFR 60.752 (in addition to other requirements) constitutes "Maximum Achievable Control Technology" (MACT) under recently promulgated EPA regulations and will result in significant

reductions in the amount of hazardous or toxic air pollutants which are contained within the gas stream from the landfill.

Additionally, the anticipated implementation of a LFGTE project at RBL has the potential for eliminating (in the immediate vicinity of RBL) those air emissions that would occur even with the use of the LGCCS. Again, the likelihood of this occurring is increased if the expansion is approved, since a large, long-term supply of landfill gas is an incentive for an end user to make the necessary system changes that would allow the use of landfill gas for energy. Such a potential end user exists in the area of the existing RBL. This potential end user is currently studying the feasibility of such a project and has the capacity to take all of the landfill gas generated by the expanded RBL, as well as the Jefferson Parish landfill.

A LFGTE project, if implemented, would avoid, to the maximum extent possible, any adverse impacts to air quality that may arise as a result of the facility expansion. Even if the LFGTE project does not come to fruition. The use of the LGCCS at the expanded facility will assure that adverse air quality impacts are minimized, since the control requirements of 40 CFR 60.752 (b)(2) are deemed to be "maximum achievable control technology" and will result in a 98% reduction of non-methane organic compounds ("NMOC") by weight that are captured by the system.

A final consideration, related to location characteristics, is that the location of the existing RBL and expansion project area is not in a Parish designated as being in "non-attainment" with air quality standards, nor is the expansion area in a Parish designated as an "Adjoining Parish" under LDEQ Air Quality Regulations. This is a significant consideration, since four Parishes in the

northern portion of the RBL service area (St. Martin, Assumption, St. James and St. John the Baptist) are designated as "Adjoining Parishes", where there is a very real concern about the effect of additional pollutants.

The conclusion that adverse air impacts have been avoided to the maximum extent possible is consistent with the previous decisions of both the LDEQ and the court which upheld the LDEQ's decision.

4. Aesthetic Impacts:

Aesthetic impacts include the visual effect of the expanded landfill as well as odor problems typically associated with the operation of landfills. These impacts, like those at the existing facility, will be controlled in several ways. First, regarding visual impacts, it should be noted that the expanded portion of the facility is to be located between two areas already utilized for solid waste disposal activity. Accordingly, the relative adverse environmental impacts of the expansion are minimal when compared to, for example, the construction of a new "stand alone" facility of the same capacity in a virgin or "greenfield" area.

Additionally, the zoning changes discussed above act to avoid the potential adverse aesthetic impacts by way of transitional zoning and land uses which act as a buffer zone between the expansion area and incompatible land uses. The zoning changes also include "on-site" buffer zone, fencing/berming and landscaping requirements that go **beyond** the requirements of the LDEQ's solid waste regulations and act to further avoid adverse impacts. As set forth in Section 40-615 of the Zoning Ordinance, the first twenty feet of the required setback area from a property line that abuts a public road must "...be landscaped and buffered by trees, shrubs, earth berms or a combination of the same. In no event shall such buffer be less than seven feet in height." In addition, a "minimum

seven (7) foot solid fence shall be provided around the operations. The fence shall not be located within the required setback." These requirements are in addition to the Zoning Ordinance's setback requirement of 200 feet from any non-residential zoning district and 500 feet from any residential zoning district. (See Section 40-614¹⁴). For existing facilities in the M-4 District, such as RBL, the requirement of upgrading to meet these buffer/landscaping/fencing requirements is triggered by application for "...and receipt of a permit from any state or federal agency to expand existing operations." (Section 40-617). Thus, by granting the requested permit modification, the LDEQ will in effect require RBL to comply with these requirements, which go beyond the LDEQ's requirements and act to avoid, to the maximum extent possible, adverse aesthetic impacts.

Other aesthetic impacts from the operation of the expanded facility include potential adverse visual impacts (such as night time glare) associated with the operation of the thermal oxidizer (flare) to be used as part of the required LGCCS. As previously noted, the operation of this flare will act to minimize air contaminants and, to the extent it is utilized, it will be situated on the facility in a manner which visually shields the flare from the nearest residential area. Of course, in the event a LFGTE project is implemented at the expanded site (and again, the likelihood of this occurring is increased if the expansion is authorized), the flare will **not** be utilized and will only be used in a "stand-by" capacity, in the event delivery of landfill gas to the end user is interrupted.

Concerning odors from the expanded facility, and as addressed by the existing facility, these

¹⁴Note that there are no residential zoning districts in direct contact with the "M-4" waste zoning district. Rather, there are transitional zoning areas for commercial uses, etc. Accordingly, with the existing zoning, there would never be the need for a 500 foot setback. This appears to be an error in the ordinance or, perhaps, it was included for situations that may arise in the future, if an area were re-classified in such a manner as to place a residential area next to the M-4 District.

are controlled by the facility operational plans which, in compliance with the solid waste regulations, minimize exposed putrescible wastes through the use of daily cover. In the event unusually strong odors are present, facility employees are required to take corrective measures.

5. Wetlands Impacts:

Potential adverse impacts to wetlands from the construction and operation of the expanded facility are expected to be minimal. Preliminary analysis indicates that there are no jurisdictional wetlands in the area of the expansion that would require a "Section 404" Dredge and Fill Permit. The entire area of the existing RBL, and the expansion area, are surrounded by a hurricane protection levee and has, historically, been force drained. As noted in the original response to the "IT Questions" for the facility, the Lake Catahouche Hurricane Protection Levee was constructed in the 1960s and the Lake Catahouche Pumping Station was put into operation around 1970. Since then, the area has been subjected to drainage, and the dewatering of soils in the area "is attributed to the canals and pumping stations operated by Jefferson Parish." (See original response to LAC 33:VII.519 Part III, "Additional Supplementary Information" at page III-3.).

A study is currently being conducted to confirm the status of the expansion area as non-jurisdictional wetlands. The results of this study, which of necessity must be conducted throughout an entire growing season, will be provided to the LDEQ when it is complete.

6. Safety Risks:

Potential adverse safety impacts include the potential for accidents or injuries at the facility related to or involving hazardous materials. As with the existing facility, such risks are minimized by way of facility operational plans which carefully control incoming waste types (see the discussion of waste characterization and screening procedures in the Facility Operations Plan and the Industrial

Waste Acceptance QA/QC Plan). In the unlikely event such an incident occurs, however, the facility, as expanded, is near emergency response service providers with the capability to provide the services required by La. R.S. 30:2057. Both of these service providers have indicated that the planned expansion will not adversely impact their ability to provide such services. (See Volume I, Attachment "F" to RBL's Supplement to Modification # 7)

Another potential safety risk posed by the expansion is the risk of traffic accidents. The transportation infrastructure leading to the facility has previously been determined to satisfy the requirements of LAC 33:VII.709.A.1., which requires that a solid waste disposal facility have access by all weather roads which are designed to avoid hazards conducive to accidents. Since the requested modification does not change the location of the entry or exit to the facility, and does not affect the annual disposal rate at the facility, there is no significant change in the risk of this adverse impact occurring as a result of the planned expansion.

The requested change in the weekly disposal capacity for various categories of waste, as explained in the application, is being requested primarily to allow operational flexibility for those situations where large scale (but short term) industrial waste disposal needs arise from specific remediation projects within the service area of the RBL. The beneficial effect of this requested modification is obvious, and far out weighs any potential adverse impact, in that it is environmentally preferable to dispose of such wastes in a properly designed and operated landfill, as opposed to the alternative of leaving such wastes in place. Risks posed by increased traffic at the landfill to accommodate the temporary periods of increased disposal activity associated with this capacity should be alleviated by the requested change to allow two tipping areas, thereby increasing safety in times of heavy traffic and preventing any short-term traffic congestion that may arise during

temporary periods of increased disposal activity.

A final potential safety risk that is posed by the planned expansion relates to the risk of impacts between birds at the landfill and the air traffic utilizing the New Orleans International Airport. Although the area of both the existing RBL facility and the planned expansion are outside of the 10,000 foot limitation imposed by LAC 33:VII.709.A.2., the expansion area was within the distance within which notification to the FAA and the local airport authorities is required. RBL provided such notice and has received response letters indicating the desire of these entities that RBL develop and implement a bird hazard mitigation plan. No such plan is currently in place at the existing RBL. However, RBL has retained an expert on this issue and in the event the requested modification is granted, will implement such a plan to reduce the risk - however remote - of a bird/aircraft collision. As noted in the FAA's response letter, the FAA has no objection to the proposed expansion, provided a bird hazard mitigation plan is implemented at the facility. (Attached hereto as Exhibit "D")

Clearly, safety risks at the expanded facility will be avoided to the maximum extent possible.

7. Adverse Impacts to Property Values:

Another potential adverse impact that could arise as a result of the facility expansion is the diminution of property values that can occur when a solid waste disposal facility is constructed. Again, however, the fact that the capacity increase will occur by way of the expansion of an existing facility, rather than the creation of a new facility in a "green field" area means that the risk of such an adverse impact is substantially reduced, if not eliminated. This is particularly true since the expansion will occur in an area sandwiched between existing solid waste disposal facilities, in an area zoned exclusively for waste related activities. Locating the additional disposal capacity

represented by the expansion in such an area acts to avoid, to the maximum extent possible, the risk of such an adverse impact, since there are legally enforceable zoning requirements that prevent inconsistent land uses from being located near one another.

8. Adverse Impacts to Environmentally Sensitive Areas:

An additional adverse impact that could arise by virtue of the proposed expansion is harm to "environmentally sensitive areas" such as parks, wildlife management areas or historic sites. These impacts are avoided to the maximum extent possible by virtue of the location characteristics of the expansion area, since there are no sensitive environmental areas within the site of the planned expansion. Reference to the application shows that sensitive environmental areas (such as endangered species habitat) are not impacted by the location of the expanded facility. There are no state or federal parks, wildlife refuges, scenic streams, or wildlife management areas at the expansion site or in the immediate vicinity. Additionally, there are no known historic sites or archeological resources in the vicinity of the Site. As noted in the letter from the Louisiana Department of Wildlife and Fisheries ("LDWF"), no rare, threatened, or endangered species or critical habitats were found within the area of the captioned project that lies in Louisiana. (See letters provided in response to LAC 33:VII.521.A.1.e.)

The only potential issue of concern was a bird rookery noted by the LDWF to exist in the vicinity. Investigation of this issue by RBL revealed that the rookery is located on the other side of the existing GNOL facility, approximately 4000 feet west of the western most property boundary of the expansion area. Activity in the expansion area should not impact the rookery at its existing location but, as noted by the LDWF, rookeries are known to move from year to year. Accordingly,

RBL shall continue to assess the issue to ensure that if the rookery moves any closer to the expansion area, activities will be conducted in a manner which does not interfere with nesting activities.

9. Adverse Impacts from Flooding

Although located within the 100 year flood plain (this is a potential "drawback" of the site which is far outweighed by the presence of suitable soil types commonly found in the flood plain), measures are incorporated into the facility expansion plan which minimize the adverse impacts which can be expected to occur as a result of the location of the facility in this area. As noted at Section 521.C of the Solid Waste Application, the facility will be enclosed by a levee which will provide a minimum of 2 feet of freeboard for the 100 year flood. Since the entire site (the existing RBL facility and the expansion area) is already located within a hurricane protection levee and subject to pumping by the Parish for drainage, any adverse impacts that may arise by virtue of location within the 100 year flood plain (such as the washout of waste during a flood period) are avoided to the maximum extent possible by virtue of the facility levee system which provides two feet of freeboard above the 100 year flood level. Additionally, concerning the impact of the expansion on flood levels, it should be noted that the Parish continually reassesses its pumping capacity needs, based on the level of development within its levee system, and increases pumping capacity to address decreases in flood water carrying capacity caused by development. Thus, increased harms from flooding should not occur as a result of the expansion.

10. Potential Adverse Impacts from Miscellaneous Minor Modifications.

Because the requested solid waste permit modification incorporates a number of changes in

addition to the westward expansion, the affect of these modifications should be assessed to ensure that the real and potential adverse effects which may flow from these modifications has been avoided to the maximum extent possible.

Broadly speaking, RBL contends that these changes have either: 1.) no or only minimal adverse effect and/or 2.) a beneficial environmental effect. Accordingly, the requested changes would not affect the ultimate conclusion previously reached, i.e., that the potential and real adverse environmental affects of the facility had been avoided to the maximum extent possible. This conclusion is bolstered by a review of the nature of the requested changes.

The requested change to allow operation on Sundays may be viewed as causing a potential adverse effect related to increased noise and traffic on an additional day of the week, but when viewed in light of the limitations on (and purposes of) the ability to operate at this time, it is evident that on balance the benefits of the change outweigh the potential adverse effects. As stated in the application, the ability to operate on Sundays **will only be utilized in times of high demand, such as after holidays or storm events**. Thus, potential adverse impacts will be limited to these times. At the same time, however, the ability to rapidly and effectively provide periodic high disposal capacity provides environmental benefits since waste generated during holidays, etc. will be more rapidly disposed of in a facility designed to provide the greatest level of environmental protection, thereby reducing the potential adverse impacts of waste left awaiting disposal in areas of generation or accumulation (i.e., pickup stations, transfer stations, etc.).

The requested change to allow the use of dual tipping areas can be viewed in a similar manner. Dual tipping areas may arguably provide increased adverse impacts in the form of increased noise and traffic during the limited periods that both tipping areas will be in use, but a review of the

purpose for the use of dual tipping areas demonstrates that there will be increased benefits which outweigh the potential adverse impacts. In particular, as previously noted, the use of dual tipping areas will increase safety, since it will allow the separation of large and small vehicles during periods of heavy traffic and will prevent the buildup of traffic waiting to unload at the facility.

The requested change to facility operational plans related to asbestos waste is being requested for the sole purpose of making the permit consistent with the applicable OSHA regulations, and alleviating the need for a permit modification in the event of changes in the OSHA regulations. Accordingly, there are no potential adverse impacts associated with this modification.

Finally, consideration must be given to the changes related to quality assurance plans for testing associated with density and permeability. These changes are being requested as a result of the history of testing conducted to date, which indicates that such extensive testing is unnecessary. In fact, all sampling conducted to date has proven satisfactory. Stated differently, no sampling conducted to date has revealed inadequate density or permeability, indicating that other quality control measures are sufficient, and that the degree of testing currently required is not necessary to ensure that the facility has been constructed in accordance with regulatory requirements. In particular, both Proctor and Attaberg tests conducted on clay utilized for part of the facility liner assure good quality, as demonstrated by the uniformly satisfactory sampling results. Finally, the requested reduction in the number of density and permeability tests means fewer punctures of the clay liner and fewer opportunities for leachate migration as a result of the creation of these punctures, in the event of failure of the repair/sealing of the test locations.

In summary, all of the potential and real adverse impacts that could arise by virtue of the facility expansion and the additional facility modifications that are requested in the application have

been avoided to the maximum extent possible. Location characteristics, facility designs and operational plans all work together to achieve this result.

B. Does a Cost/Benefit Analysis Demonstrate that the Social and Economic Benefits of the Facility Outweigh the Environmental Impact Costs?

Yes. A cost/benefit analysis demonstrates that the social and economic benefits of the facility outweigh the environmental impact costs. The direct and indirect economic benefits that will accrue from the construction and operation of the expanded facility, the social and environmental benefits that will accrue as a result of the additional disposal capacity, primarily for the Greater New Orleans Area, as well as the benefits that could accrue as a result of the implementation of a LFGTE project, all outweigh the adverse environmental impact costs that may occur as a result of the requested facility modifications.

This portion of RBL's response to the IT Decision questions is particularly significant and has been undertaken with the assistance of economist Dr. Timothy Ryan, Dean of the University of New Orleans School of Business and Economics, as well as an in-depth analysis of the potential benefits which may be realized through the implementation of a landfill gas-to-energy (LFGTE) sales arrangement, which analysis was conducted by one of the partners in the EPA's Landfill Methane Outreach Program (LMOP), Preventive Maintenance Services, Inc. (PMSI), an industry leader in the area of LFGTE project and technology development. The analysis of costs addresses the costs of the real and potential adverse environmental impacts discussed above, as well as those social and economic costs which have the potential to arise in the context of landfill operations.

In regard to these costs, it must be understood that many are of a contingent nature; i.e., the cost of groundwater contamination may only be fully known in the unlikely event of a failure of the

liner and leachate collection system and a release of contaminants. Being contingent in nature, these costs are not subject to quantification at this time. Additionally, by their nature, some of the costs cannot readily be assigned a dollar value. For example, what is the value of an impairment of the quality of life that may be experienced by area residents as a result of night-time glare from the LGGCS flare? Such an adverse impact simply cannot be assigned a dollar value, with any degree of certainty, but a complete cost/benefit analysis must nonetheless attempt to weigh them, despite the difficulties inherent in a comparison of non-quantifiable costs and quantifiable benefits.

The "benefits" portion of the analysis addresses traditional economic benefits of the construction and operation of the expanded landfill (e.g., the economic multiplier analysis for employee salaries, etc.), as well as the contingent (although RBL believes very likely) benefits (both economic and environmental) that may be realized if the contemplated LFGTE project is made a reality - a reality which is made more probable by virtue of the location and nature of the proposed expansion.

COSTS:

Costs of the facility expansion include the real or potential adverse environmental impacts, discussed above. Again, these include potential groundwater impacts, surface water impacts, air quality impacts, aesthetic impacts (odor and glare from the LGGCS flare), impacts to wetlands, safety risks, adverse impacts to property values, impacts to "sensitive environmental areas", impacts associated with location in the 100 year flood plain and the miscellaneous impacts associated with the minor modification aspects of the application.

BENEFITS:

The study was conducted by Dr. Timothy Ryan, Dean of the School of Business and Economics at the University of New Orleans. Dr. Ryan's report is attached as Exhibit "E". Utilizing accepted methodology for assessing the "economic multiplier" effect of the expansion project, based on the proposed schedule for implementation of the expansion phase of the landfill, Dr. Ryan reached the following conclusions:

EXECUTIVE SUMMARY OF DR. RYAN'S REPORT:

- The major economic benefit of the expansion of the landfill for the New Orleans metropolitan area will be the extension of the life of the landfill. The expansion will not change the current economic conditions (either positive or negative) to any great extent. The expansion will, however, extend the life of the landfill from 2014 to 2050. At the current rate of usage, the existing landfill, which is the major landfill for the entire New Orleans metropolitan area of 1.4 million people, will run out of usable space in 2013. At that point, if nothing is done, the costs of removing solid waste will increase for all citizens, businesses, and governments in the New Orleans area.
- The current proposal calls for the construction of the expanded landfill over a period from 2002 to 2042. The total dollar value of the primary, or direct, spending of this construction project will be \$57.17 million. The secondary impact of the direct spending due to the capital spending is equal to a total of \$45.20 million. Combining this with the direct spending produces a total economic impact due to the capital phase of the project of \$102.38 million (See Table 3). This is money that would not have come into the local economy if the project were not to be undertaken.

- The construction phase primary spending will produce an average of 78 new jobs per year for the years in which construction occurs over the next 40 years in the area economy over the construction phase of the project. The construction and related spending will also create an average of \$1.90 million in income (or a total of \$30.35 million) for area residents per year for the period of construction. It must be remembered that these are not permanent jobs and income but exist only during the construction phase.
- The River Birch Landfill expansion will generate a total of \$2.47 million in new state tax revenue during the construction phase of the project. This is general fund revenue for the state of Louisiana. In addition, Landfill expansion construction will create \$1.30 million in new tax revenue for local governments in the New Orleans area. In total, state and local governments will collect an additional \$3.78 million as a result of the construction activities associated with the River Birch landfill expansion.
- Once the facility is completed, the operations of the River Birch landfill expansion will extend the useful life of the landfill by 36 years. Since the current River Birch landfill is the major landfill for the New Orleans MSA and since permitting a brand new landfill is very difficult, even if suitable land could be found, the proposed expansion of the River Birch facility will allow the entire New Orleans area to retain affordable solid waste disposal. The positive benefit of retaining affordable solid waste disposal impacts residents, businesses, and the community as a whole.
- In 2014, the year that the current landfill will close if not expanded, the alternative tipping fee will be \$42.50 compared to an estimated \$37.17 if it is expanded. By 2050, the tipping fee without expansion will be \$123.17 compared to \$86.94 with expansion. The economic

value to the residents of southeast Louisiana will be the lower rates for residential and commercial solid waste collection multiplied by the estimated total amount of solid waste expected.

- The total economic benefits are the sum of the construction benefits, the spending due to the landfill operations, and the reduced solid waste disposal costs that will result from the expansion of the landfill. Since these economic benefits are spread out over a 48-year period of time - from 2002 to 2050 - it is appropriate to discount the present value of the stream of benefits over the 48-year period. The discount rate used is the long-term U. S. government bond rate of 5%.
- In total, the landfill expansion will generate a present value of \$508.59 million in new primary spending and \$157.21 million in secondary spending for a total impact of \$665.80 million for the New Orleans area economy.
- The expansion of the River Birch landfill will generate an average of 623 jobs per year during the construction and operations phase. The economic activity related to the landfill expansion and reduced solid waste disposal costs will create a total of \$214.98 million in earnings for local residents, in discounted present value.
- The new landfill expansion will generate a present value of \$13.23 million in new state tax revenue. This is general fund revenue for the state of Louisiana. In addition, the landfill expansion will create \$4.95 million in new tax revenue for local governments in the New Orleans area. The combined state and local new tax revenue created by landfill expansion is \$18.18 million.

The foregoing conclusions are, of course, related to benefits that are not contingent in nature, and indicate that **significant** economic benefits can be expected to accrue as a result of the implementation of the expansion project. In addition to these benefits, however, there are others which will occur if the requested permit modification is granted. These include the aesthetic improvements that must be implemented in the event the expansion is approved, under the Zoning Ordinance provisions which require upgrades when an existing facility receives a permit for an expansion - including landscaping, berming and fencing along the entire property line of RBL adjoining the highway. Also included as a benefit (or, conversely, a reduction in the potential for "costs") that should be assessed in the cost/benefit analysis are the protections that will be afforded by the Bird Hazard Mitigation Plan that must be implemented in the event the expansion is approved. Note that in the event the expansion is not approved, no such plan will be required (See discussion of the "No Action Alternative", below, wherein it is noted that the denial of the modification application will result in the Zoning Ordinance upgrades and the Bird Hazard Mitigation Plan not being implemented).

In addition to the foregoing benefits, the contingent benefits that could accrue as a result of the implementation of a LFGTE project must be assessed. As noted in the letter provided by PMSI, (attached as Exhibit "F"), the environmental benefits that would accrue as a result of the implementation of a LFGTE project at the expanded RBL are as follows:

The overall environmental benefits during the life of the expanded RBL facility cannot be fully qualified outside the existing 15 year model. However, the 15 year calculation is a total of 21,426,844,791 cubic feet of methane that could be recovered and utilized. The emissions reductions benefits associated with the combustion of the displaced hydrocarbons would be equivalent to any one of the following annual environmental benefits:

- Taking 53,620 cars off Louisiana's roads
- Planting 73,118 acres of forest
- Preventing the use of 566,688 barrels of oil

The benefits that would accrue if the LFGTE project is implemented are enormous. Imagine, on an annual basis, the pollutants that would be removed from the atmosphere in the area of RBL if the equivalent of 566,688 barrels of oil in hydrocarbons did not have to be burned for generation of energy at the location of the potential end user (who is, again, currently assessing the viability of the LFGTE project). This end user is located within 10 miles of the RBL facility. Imagine the emissions that could be avoided in the immediate vicinity of RBL in the event the LFGTE project is implemented, since the LGCCS flare system would not be in operation - rather, it would be on "stand-by" mode, to be used only in the event delivery of landfill gas to the end user is interrupted. Combustion of the landfill gas would take place miles away, at the facility of the end user. Again, RBL stresses that the likelihood of implementation of the LFGTE project at RBL is increased if the expansion is approved, since the increased landfill gas that would be generated by the increase in capacity (and facility life) resulting from the expansion makes the project more viable for the end user and increases the end user's incentive to implement the project.

The benefits of the LFGTE project are even more significant when one considers the currently projected difficulties in the nation's supply of natural gas (which fuel is currently being used at the potential end user's facility for the generation of steam and energy). As noted in the letter of PMSI:

The attractiveness of (and need for) an LFGTE project has a direct correlation to the price of natural gas. As indicated by the recent press release of the Louisiana Chemical Association, "the price of natural gas in the United States is expected to rise, in the near future, to the point of

potentially forcing many LCA members out of business." Thus, the need for the development of LFG direct use projects will only increase in the coming years. The River Birch landfill also offers significant development opportunities with its expansion that other landfills can not offer due to size and location to potential clients. (emphasis supplied).

Clearly, the economic benefits that would accrue to the end user of landfill gas from the expanded RBL are also significant, as are the societal benefits that would exist in the event the availability of landfill gas as an economically viable energy source helps to prevent the end user from being forced out of business during the expected near future rise of natural gas prices.

The benefits from the implementation of a LFGTE project at the expanded RBL are significant. A LFGTE project is a "win-win" situation, both economically and environmentally. Although contingent at this point, the benefits of a LFGTE project at the expanded RBL should be considered in the context of the cost/benefit analysis required under the "IT Questions", just as contingent costs/adverse impacts are considered. This is particularly true where, as here, granting the requested permit modification for the expansion will increase the likelihood of the LFGTE project becoming a reality.

Considering the foregoing costs and benefits as a whole, it is clear that the benefits of the requested facility modifications/expansion outweigh the costs.

C. Are There Alternative Projects Which Would Offer More Protection to the Environment than the Proposed Facility Without Unduly Curtailing Non-environmental Benefits?

No. There are no alternative projects which would offer more protection to the environment than the proposed facility without unduly curtailing non-environmental benefits. This conclusion is supported by an assessment of the "no action" alternative, an assessment of the "stand alone facility" alternative for achieving the necessary increase in disposal capacity,

an assessment of alternative facility modifications and an assessment of the various technologies for solid waste disposal that exist as potential alternatives to landfilling of solid waste.

As a preliminary matter, reference is made to the LDEQ's prior decisions on this issue, which recognize that there were no alternative projects which would offer more protection to the environment than the RBL facility, without unduly curtailing non-environmental benefits. The analysis in the present case must start with these prior decisions, and particularly the LDEQ's decision on Major Modification No. 5, which decisions have become final. The question becomes, however, in the context of permit applications such as those now pending before the LDEQ, whether there are alternatives to what are in effect modifications to an existing facility. Several potential alternatives should be examined:

1. **The "No Action" Alternative:** In the context of the environmental impact analysis required under Federal Law¹⁵, one alternative which the agency is required to assess is the "no action" alternative. In other words, what would the effect be of not granting the requested permit modifications? Because, as explained above, granting the requested permit modifications would actually provide certain environmental and societal benefits, the effect of not granting the requested permit modifications would be to prevent these improvements and benefits at the facility. Thus, in the event the requested permit modification(s) are not granted, the following benefits would not be realized:

¹⁵The National Environmental Policy Act (NEPA), 42 USCA 4321, et seq.. Although there is no clear legal requirement under state law that the "no action" alternative be considered in the context of the required analysis of alternatives, the Louisiana Supreme Court, in the Save Ourselves decision, indicated that the requirements of NEPA provide some guidance for the performance of the analysis required under La. Const. Art IX, Sect. 1 (1974).

- 1.) The RBL facility would not implement a Bird Hazard Mitigation Plan;
- 2.) The RBL would not be required to "upgrade" to meet the more stringent fencing/landscaping requirements imposed by the Zoning Ordinance on existing facilities;
- 3.) Groundwater monitoring wells and equipment will not be installed on the western-most edge of the expansion area, providing some degree of protection against potential groundwater contamination emanating from the now closed GNOL;
- 4.) The Greater New Orleans Area will not be guaranteed a near-by (and hence economical, from a transportation cost standpoint) and environmentally sound source of solid waste disposal capacity, through the year 2050;
- 5.) *To the extent the demand for the disposal capacity represented by the planned RBL expansion is satisfied by the creation of a "stand-alone" facility of equal capacity elsewhere, a relative increase in the adverse environmental impacts that result from the creation of a new facility, rather than an expansion of an existing facility in an area already used for solid waste disposal, will be realized;*
- 6.) The economic benefits calculated in Dr. Ryan's analysis and report will not be realized;
- 7.) *The likelihood of successfully implementing a LFGTE project at RBL will be reduced, since a larger, longterm supply of landfill gas is the best incentive to end users to implement such a project;*

- 8.) The facility will not be allowed to operate dual tipping areas, thereby preventing the realization of the safety benefits that dual tipping areas will allow;
- 9.) The facility will not be allowed to operate on Sundays, in times of short-term increases in demand for waste disposal capacity (such as after storm events or holidays) and will not be allowed to have a weekly increase in disposal rates for certain categories of waste (such as that generated during specific remediation projects), meaning that it will take longer for such wastes to be disposed of in an environmentally protective Subtitle D facility. This situation could, in turn, result in harms which expeditious disposal in an environmentally sound landfill could avoid, such as increased risk of disease and increased odors in areas of waste accumulation.

The "no action" alternative, when viewed in light of these effects, is not a viable alternative.

2. **The Stand-alone Facility Alternative:** The creation of a "stand-alone" facility to provide the disposal capacity represented by the expansion of RBL is a possible alternative to the expansion. This alternative has one very significant drawback, which drawback was a primary motivating factor in RBL's analysis of the questions of "alternative projects" and "alternative sites". This drawback is, as discussed previously, the relatively greater environmental harms that result from the creation of a new facility, particularly in a "greenfield" area, as opposed to simply expanding an existing facility. This common sense principal of land-use planning has been sanctioned by the courts in the context of reviewing the LDEQ's analysis of the "IT Questions".

In Coalition for Good Government v. Louisiana Department of Environmental Quality, 772 So.2d 715 (La. App. 1 Cir. 2000), the LDEQ granted the facility hazardous waste treatment, storage and disposal permit.¹⁶ The permit applicant in that case developed and applied a multi-tier analysis of alternatives which took into consideration general classifications of potential alternatives (i.e. "greenfields", "brownfields", "undeveloped industrial", etc.), as well as site specific considerations of both an environmental and economic nature (i.e. proximity to waste generation sites, proximity to transportation infrastructure, proximity to sensitive environmental areas, etc.). The court in Coalition for Good Government v. Louisiana Department of Environmental Quality approved of the decision to grant the permit, thereby sanctioning an analysis of alternatives that recognizes that a new facility creates greater environmental harms than the use of an existing facility.

In this case, of course, the proposal for use of the existing facility is by way of an expansion, but there is no reason that the common sense principal should not be applied here, particularly where the expansion of the existing facility is onto a tract of land situated between two areas already used for solid waste disposal, in an area zoned solely and specifically for waste related activities.

The alternative of a stand-alone facility is less attractive than the expansion of the existing RBL for yet another reason, related to the acreage that would be necessary to achieve the same capacity increase. A stand-alone facility would require a much larger surface area to achieve the same volume increase, since the landfill cells could not be "piggy-backed" on the existing cells present at the existing RBL. The proposed expansion, on the other hand, allows an increase to

¹⁶ Again, in the present case, no hazardous waste, or even Type I or II waste is involved.

approximately 48 million ton capacity, from the existing 15 million ton capacity of the RBL facility, by use of the limited acreage in the expansion area.

The stand-alone facility alternative, because of the relatively greater environmental harms it would entail, is not a viable alternative to the facility modifications and expansion proposed by RBL.

3. **Alternative Facility Modifications:** There are an untold number of potential facility modifications which could form the basis for an analysis of alternative projects. Limiting this analysis to those reasonable modifications which relate to the primary goals to be achieved by the requested facility changes results in a more manageable number of alternatives to consider. Such a limitation is consistent with the "rule of reasonableness" that the Supreme Court imposed in its original decision in the Save Ourselves case. The following is an assessment of reasonable alternative facility modifications intended to achieve the goals of some of the requested changes.

First, concerning the changes necessary to allow for the safe and expeditious disposal of solid waste generated during times of high waste generation (holidays, storm events or specific remediation projects generating large quantities of waste on a short term basis), it should be recognized that the need for these changes was determined based on the fact that the facility would, in times of high waste generation, utilize nearly all of the weekly capacity on given categories of waste. The related issue of dual tipping areas arose from recognition that in times of increased demand for waste disposal capacity, the single tipping area approved in the current facility permit was congested with transport vehicles, resulting in an unsafe situation for both customers and

employees of the facility. For this reason, the increases in weekly disposal capacity for given categories of waste, dual tipping areas and increased times of operation have been requested.

Alternative facility modifications which could achieve the goals of safely expediting waste disposal during times of high disposal capacity demand would include a simple, across the board increase in weekly capacity and times of operation, not limited to use in times of high demand or limited by the overall facility capacity limitations. Additionally, a modification requesting more than two tipping areas could be viewed as an alternative modification which would achieve the goals sought to be accomplished. However, at this time, RBL has determined that such an alternative is simply not necessary and would result in an unnecessary increase in potential adverse impacts, with no corresponding benefit. Simply stated, based on the analysis of need existing at this time, the goals sought to be achieved by the requested modifications of the facility solid waste permit can be achieved by the more limited modifications now being requested.

In regard to the issue of the pollution control technology recognized as being required under the facility's Title V Air Permit, a conceivable alternative project would include the implementation of a LFGTE project. This alternative is certainly one which RBL hopes to be able to achieve, as it will be economically beneficial for RBL to sell, rather than burn, its landfill gas. If such a project is deemed to be feasible by the end user currently studying the issue, and the project is likewise feasible for RBL, it will in fact be implemented. Significantly, in this regard, nothing in the facility modification requested herein would foreclose this option, since the landfill gas collection system included in the expansion plans is the same system that would be utilized to gather the landfill gas for sale to the end user in the event a LFGTE project is realized. The only difference in the system

is that rather than running the gas to the flare, after it is gathered, it would be placed in a transmission system for conveyance to the end user.

Alternative facility modifications that could achieve the goals of the modifications requested by RBL are not viable, for the foregoing reasons.

4. Alternative Technologies for Waste Treatment or Disposal

RBL has considered alternative technologies for waste treatment and disposal and has concluded that landfilling of solid waste, as set forth in the application, is the only environmentally sound alternative that is also cost effective. Little has changed since the issue was addressed in RBL's original application and the LDEQ determined that there were no other viable alternatives to operations at the RBL facility.

With the exception of LFGTE projects, discussed above, the economics of energy recovery from solid waste combustion continues to restrict its status as a viable alternative to land filling. In addition, energy recovery from solid waste combustion (or even simple solid waste incineration) presents a number of adverse environmental effects which weigh against combustion/incineration as a viable option. Studies of the effects of municipal waste combustion indicate potential adverse consequences related to emissions of dioxin resulting from the burning of plastics with high chlorine content.¹⁷ Additionally, combustion of solid waste leaves ash - often contaminated with toxic metals - which must itself be disposed of by landfilling.

In regard to resource recovery and/or waste type segregation, the primary municipalities in the service area (those communities in the Greater New Orleans Area) have curbside recycling

¹⁷See, e.g., Costner, Pat; *The Burning Question - Chlorine & Dioxin*, April 1997.

already so, for the most part, waste streams going to the RBL have already been minimized. Additionally, waste stream segregation as an "alternative" to land filling has already been incorporated into the operational scheme for the modified facility. Part of the business plan for the RBL facility includes the strategic alliance between RBL and the proposed Hwy 90 LLC C&D Waste and Woodwaste facility. As explained in the IT Questions response submitted with the Hwy 90 LLC application (now pending), the business relationship between RBL and Hwy 90 LLC has the potential for achieving long-term beneficial changes.

"Additional issues which warrant attention relate to the overall business plan of Hwy 90 LLC, as related to the anticipated source of Type III waste that is to be disposed at the facility. Although the "service area" of the proposed Hwy 90 LLC facility is listed as a 10 parish area,¹⁸ Hwy 90 LLC intends to primarily receive Type III waste diverted from River Birch Landfill (RBL) as a means of extending, to the maximum extent possible, the life of that facility as a Type I and II waste disposal facility. Such an arrangement is made possible by the fact that the entities have agreed that RBL's Type III waste stream will be deposited at the Hwy 90 LLC facility. . . . For these reasons, and as discussed in greater detail below, Hwy 90 LLC's assessment of the issues under Section 523 and, particularly, alternative sites, was influenced by recognition of RBL as the "defacto" source of the vast majority of the waste to be disposed at the proposed facility.

The rationale for this arrangement with RBL is equally important. Based on current waste acceptance rates, the estimated quantity of Type III waste being disposed at RBL and anticipated growth in demand for disposal capacity, both RBL and Hwy 90 LLC believe that a guaranteed, long term source of Type III disposal capacity is necessary to preserve, to the maximum extent possible, the environmentally sound Type I and II waste disposal capacity RBL provides for the City of New Orleans. The goal of ensuring long-term, environmentally sound disposal capacity for Type I and II waste from New Orleans is extremely important in light of past difficulties in this area. Another important consideration is the ability of the joint RBL/Hwy 90 LLC relationship to enhance resource recovery efforts. As noted in the application, Hwy 90 LLC intends to segregate clean concrete, asphalt or stone for reuse or sale. This

¹⁸ Encompassing Assumption, St. James, St. John the Baptist, St. Charles, Lafourche, Terrebonne, Jefferson, Orleans, Plaquemines and St. Bernard Parishes.

material would otherwise consume landfill space at RBL and displace environmentally protective disposal capacity for Type I and II waste.

Once a long-term, contractually assured source of Type III disposal capacity is provided through permitting of the Hwy 90 LLC facility, RBL will be able to more efficiently and economically serve its municipal customers, most of which do not at this time effectively separate municipal solid waste from Type III wastes. Promoting such segregation would be possible under the proposed relationship with Hwy 90 LLC, since such municipalities will have a significant economic incentive (in the form of lower disposal costs for Type III wastes) to segregate such wastes at the pick stations utilized by RBL. Under this plan of action, significant benefits accrue to all parties involved, including cost savings for municipal governments and the environmental benefits of enhanced resource recovery and extended life for the environmentally protective disposal capacity for Type I and II wastes at RBL."

Thus RBL agrees that waste segregation as a means of preserving Type I and II waste disposal capacity is, to a limited degree, a viable alternative and, as such, is incorporating such plans into its business plan. This plan will help to reduce, to a limited degree, the amount of waste destined for land filling in the expanded RBL facility, thereby preserving the environmentally protective Subtitle D capacity to the maximum extent possible. Beyond this plan, already incorporated into the business plan for RBL, resource recovery and/or waste type segregation are not an alternative which could serve as a complete alternative to the operations of the expanded landfill.

Another alternative technology that was given consideration by RBL, is the use of "bio-reactor landfill" technology. This technology provides for the in-situ treatment of landfills to promote rapid stabilization of the waste through the injection of air and/or moisture (preferably leachate). Touted benefits from the enhanced aerobic decomposition of the waste include reduction of mass, improvement of leachate quality, the reduction of odors and, potentially, the ability to "mine" compost and reusable materials (such as plastics and metals).

One of the primary benefits of this technology is the preservation of air space at the landfill, which results from a more favorable compaction rate than is said to exist at ordinary landfills. There is some debate in the community of solid waste professionals as to whether this better compaction rate is achieved as a result of the increased weight of waste which is moistened by application of recirculated leachate (or other liquids) or whether it results from actual decomposition of the waste.¹⁹ In any event, the compaction rates achieved at facilities utilizing this technology are similar to the compaction rates now being achieved at the existing RBL, by use of another innovative technology and, accordingly, bioreactor landfill technology is not necessary to achieve this benefit.

At RBL, a new computer and Geographic Positioning System (GPS) assisted program has been instituted to assist compaction efforts. This technology, which monitors compaction on a continual basis, has been successful in achieving compaction rates of approximately 2000 lbs of waste per cubic yard of air space. This is the compaction rate touted as a benefit of bioreactor landfills and compares very favorably to the approximately 1500 lbs per cubic yard of airspace that was achieved before the implementation of the technology. To RBL's knowledge, no other landfill in the state is using this GPS compaction technology, which was implemented by RBL at a substantial cost.

Bioreactor landfill technology is in its infancy and, although there are some promising results from bioreactor landfill experiments, there are a number of concerns associated with its use that have not been fully examined. As noted by the EPA, these include:

¹⁹See "State of the Practice for Bioreactor Landfills", Workshop on Bioreactor Landfills, EPA/625/R-01/012, available at <http://www.epa.gov/ordntrmt/ORD/NRMRL/Pubs/625R01012/625R01012.htm>, at page 3-4.

- * There may be an increased potential for fires, explosions and stability issues.
- * A wet landfill or leachate recirculation does not necessarily mean that the landfill is a bioreactor.
- * Some bioreactor benefits (such as wastemass/volume reduction) attributable to microbial decomposition may be attributable to settlement/compression from the addition of liquid.
- * Even after the majority of the waste is digested, there can still be significant quantities of material that can be reduced further over time and the potential exists for continued generation of gases and transport to groundwater.
- * Landfill gas emissions may increase if sites are not well controlled soon after liquids addition."²⁰

There are also concerns that "...oversaturation of the waste mass can ...diminish the decomposition process and pose waste mass geotechnical stability problems."²¹ Oversaturation can also result in increases in the head of the liner system "and cause excessive liner system leakage."²² Oversaturation of waste is a particular concern in Louisiana, where the amount of moisture getting into landfills is already higher than in most areas, due to the higher level of precipitation in the state. It is thought, although it has not yet been confirmed, that the naturally higher moisture content at the RBL may be the reason why the landfill gas production rates are higher than what was estimated by

²⁰Id.

²¹Id at page 2-4

²²Id

the Landfill Gas Emissions Model originally used to calculate landfill gas emission rates at RBL.²³ In effect, the higher moisture content resulting from the higher precipitation rates in Louisiana already cause landfills to act as "bioreactors" to a limited degree.

Other concerns about bioreactor technology include the fact that "enhanced odor and landfill gas generation could contribute to operational compliance problems if effective landfill odor and gas control provisions are not applied early..."²⁴ In certain situations, one of the alleged benefits of the bioreactor - an earlier and **shorter** phase of gas production - could be viewed as a drawback, since a **long-term**, stable supply of landfill gas is one of the best incentives for an end user to make the necessary investments in equipment needed to use landfill gas. Where a landfill's gas stream is already large enough to make a LFGTE project economically feasible, a shorter period of gas production (even if accompanied by a short-term increase in gas production), such as that allegedly provided by bioreactor technology, is actually an impediment to a LFGTE project.

Finally, bioreactor landfills involve "...increased sophistication and complexity over municipal solid waste landfill operations and management requirements.....[requiring] specialized bioreactor landfill training programs...."²⁵ that have, as yet, apparently not been developed. For these reasons, the EPA's Workgroup on bioreactor landfills "...suggested the need to proceed

²³It should be noted that RBL has conducted "Tier 2 Testing" which indicated a higher rate of gas generation than was originally estimated.

²⁴Id at page 2-9.

²⁵Id at page 2-12.

cautiously with bioreactor landfill implementation since the bioreactor process is not yet well understood..."²⁶

One additional issue related to bioreactor landfill technology and, particularly, leachate recirculation, is the quality of leachate ultimately produced. Generally, although some commentators are concerned that aerobic decomposition of waste may result in higher toxic metals in leachate²⁷, it is believed that leachate recirculation at bioreactor landfills ultimately results in a better quality of leachate discharged. That may not, however, be the case at RBL, due to site specific conditions there. As explained above, RBL is situated in an area where there are naturally occurring high chloride levels in the soils, probably associated with the historic presence of brackish marsh in the area. Cover soils at the facility are obtained locally and it is believed that a potential reason for the elevated chloride content in the leachate generated at RBL is the leaching of chlorides from these soils. The practice of recirculating leachate at RBL could exacerbate this problem, resulting in even higher chloride content in the leachate, a contaminant that is not easily removed from a waste water stream.

For all of these reasons, bioreactor landfill technology is not at this time deemed to be a viable alternative to the expansion plans proposed by RBL. This is particularly true since the main benefits of bioreactor landfills are either already being achieved (i.e., compaction rate) or are not necessary (i.e., an increased rate of landfill gas is not necessary to make a LFGTE project at RBL economically feasible and, in fact, reducing the period of landfill gas generation may make it less

²⁶Id

²⁷Martenson *et al*, 1999.

feasible or attractive to the end user.). It should be noted, however, that the plans for development of the expansion area are long-term and, to the extent the current experiments with bioreactor landfill technology around the country yield more certain information concerning the risks and benefits of the technology, the facility permit could in the future be modified such that later added cells at the RBL expansion site could be constructed and operated as bioreactor cells.

In short, with the exception of the waste stream separation plan contemplated by the RBL/Hwy 90 LLC strategic alliance, the implementation of curbside recycling currently occurring in most of the service area served by RBL, the anticipated implementation of a LFGTE project and the current implementation of the innovative GPS assisted compaction program at RBL, none of the alternatives to "conventional" land filling are truly feasible as an outright substitute to the expansion. In short, there are no alternative projects which would offer more protection to the environment than the facility as proposed, without unduly curtailing non-environmental benefits.

D. Are There Alternative Sites Which Would Offer More Protection to the Environment than the Proposed Facility Site Without Unduly Curtailing Non-environmental Benefits?

No. There are no alternative sites for the facility expansion, or even an entirely separate facility which would achieve the same disposal capacity increase, that would offer more protection to the environment than the proposed expansion site, without unduly curtailing non-environmental benefits. This conclusion is supported by the application of a multi-tier decisional process which assesses the previously conducted alternative sites analysis, recognizes the inherent value of a facility expansion vs. the development of a new facility, limits the scope of the area reviewed for potential alternatives based on existing data concerning the source of waste disposed at the facility, and the benefits of locating in the area of the existing RBL facility.

The issue of alternative sites for a facility expansion is more complex, in certain respects, than a straight forward analysis of alternative sites for a new facility. The complexity results from a series of common sense questions that arise when considering the scope and degree of the analysis: Should the analysis forego consideration of alternative sites altogether, since there is originally only one site for an expansion of an existing facility (i.e. next to the existing facility)? Or should the analysis look at the expansion from the viewpoint of whether the basic objective to be achieved by the expansion - here, the increase in disposal capacity of approximately 35 million tons - could be achieved in a "stand alone" project, which could arguably be located separate from the facility to be expanded?

RBL suggests that the legally correct answer lies somewhere in-between, requiring an analysis of the issue of potential alternative sites that recognizes the inherent value of a facility expansion (as opposed to the inherent, relatively greater adverse environmental impacts of a "greenfields" development), while also taking into consideration the common sense notion that the increase in disposal capacity *might* be best achieved in an entirely different location, if the existing location is found to suffer from drawbacks that would warrant a determination that either the original facility should not have been located there in the first place or that the expanded facility, due to the size increase and the specific location of the expansion, should not be located in that area.

The analysis undertaken by RBL in the planning process that resulted in the decision to expand took this approach, and the reasoning utilized in this approach is set forth below. This analysis took the form of a series of questions which first resulted in the decision to remain in the immediate vicinity of the existing RBL, followed by a narrowed assessment of potential alternative locations in the immediate vicinity of the existing RBL.

Question No. 1: Does Newly Discovered Information or Changed Circumstances Warrant a Deviation from the Original Decision(s) to Locate the RBL at its Present Location, Such that an Expansion of the Facility Would be Inappropriate?

This question was considered by way of assessing, anew, all of the factors that are appropriately considered in an alternative sites analysis for a new facility and considering whether there are any characteristics of the existing site (and the adjoining site for the expansion) that would warrant a decision different from the one which resulted in the original decision to permit the existing facility in this location. Stated differently, RBL assessed the issue of whether the factors which led to the initial decision to permit the facility are still present. To assess this question, RBL reviewed, among other documents: 1.) the original IT Questions response submitted in support of its original application, 2.) the Zoning Study (and attached forecast for solid waste landfills), 3.) various information gathered in support of the Hwy 90 LLC C&D Waste Landfill permit application, including, particularly, information on "sensitive environmental areas" in the vicinity, as well as the basic materials related to the business plan and relationship between RBL and Hwy 90. In answering this question, it became evident to RBL that circumstances have not changed in any material respect since the initial alternative sites assessment and that the conclusion previously reached by LDEQ - that the area of the existing RBL was appropriate for a landfill - is still valid.

In the original application, and in the LDEQ's decision approving that application, the proximity of the RBL site to the Greater New Orleans area (as the primary waste generation area) and to the southern parishes of the service area (which comprise the second highest source of waste disposed at the facility) was recognized as one of the principle reasons for site selection. The proximity of the site to transportation infrastructure that allows these areas to be simultaneously

served in the most efficient and safe means possible was also recognized. These factors have not changed, and the increase in capacity of the facility does not affect the conclusion related to these factors, particularly since there is no significant increase in the allowable yearly disposal rate.

Significantly, the Zoning Study recognized these factors as well, noting that the area zoned for waste related activities (which includes the expansion area) had "...sufficient acreage with appropriate soil conditions and roadway access to support regional waste disposal in the New Orleans Metropolitan Area for the next 25 to 50 years."²⁸ In fact, data gathered by RBL since operations began support the contention that the majority of its waste comes from the Greater New Orleans Area, followed by the southern Parishes in the service area. Also of particular importance in the Zoning Study are the statements contained in the waste forecast, noting that any area outside of the existing hurricane protection levee in the Greater New Orleans Area would not be likely locations for additional solid waste disposal capacity, for obvious reasons.²⁹ Nothing has changed since the original permit decision (or the LDEQ's subsequent permit decisions on modification) which would alter the basic contention that the area of the RBL site (and the adjoining expansion area) is the best location in this regard.³⁰

²⁸ Zoning Study, at page 3 (emphasis supplied).

²⁹In fact, the study notes the lack of a completed Category 3 hurricane storm surge levees in almost all of the Terrebone, LaFourche and St. Mary Parishes.

³⁰It is significant to note that the analysis undertaken by RBL, as related to proximity to primary sources of waste and transportation infrastructure, recognizes not just the economic aspects of proximity to appropriate transportation infrastructure and waste generation areas, it also considered the environmental aspects. Clearly, where distance to the primary customers of a landfill is minimized, less transportation is involved, resulting in less air pollution from trucks and less risk of accidents. These factors were taken into consideration in the decision to expand RBL as proposed, rather than permit a separate facility in an area farther from the existing site.

Looking next to the all important issues of geology and groundwater issues, the expansion area, like the site of the existing facility, has very favorable site characteristics. Nothing has been discovered since the original permitting decision that changes this aspect of the original analysis and rationale for locating RBL in its present location. No faulting has been discovered, the area has not been found to be an aquifer recharge zone and there are still no potable water aquifers beneath the area. The geologic investigation conducted for the expansion application has confirmed that the favorable geologic and hydrogeologic characteristics are: 1.) still present at the existing RBL site and 2.) also present under the expansion area. Thus, there are no changed circumstances or newly discovered information which weigh against an expansion in the immediate vicinity of the existing site.

The next factor considered by RBL in its assessment of the issue of potential alternative sites was proximity to sensitive environmental areas such as significant surface waters (e.g., scenic rivers) or cultural resources (i.e. historic, cultural or recreational resources), populated areas, inconsistent land uses and areas of poor air quality.³¹ Again, the question is whether there is any newly discovered

³¹ In regard to these issues, it should be noted that the analysis undertaken by RBL management, while primarily undertaken in the same time frame and as part of the analysis undertaken for the permit application of the Hwy 90 LLC C&D Landfill, was significantly influenced - and the initial findings confirmed by - the decision of Jefferson Parish to make its zoning changes. Again, the zoning changes incorporate not just the waste handling zone (M-4), but also a carefully confected area of transitional land use zones that buffer the existing landfill and expansion area from inconsistent land uses, including residential areas. Nowhere else in the entire service area of RBL does such a zoning regime exist and, accordingly, nowhere else is there a potential alternative site (for a "separate" facility with the disposal capacity which will be achieved by the proposed expansion) which incorporates legally enforceable protections against the conditions which can exist when inconsistent uses are in proximity to one another. Within the immediate vicinity of RBL, however, there are potential alternative sites. The analysis which was utilized to eliminate these sites from consideration for achieving the RBL expansion goals. The effect of the Zoning Change on the consideration of alternative sites is discussed, *infra*.

information or any changed circumstances which would warrant a deviation from the previously reached conclusion concerning the appropriateness of the existing RBL location, as related to sensitive environmental areas. Concerning this issue, the "updated" letters obtained to provide a response to LAC 33:VII.521.A.1.e. demonstrate that the expansion area is not in proximity to such areas. Again, the only new information/changed circumstances noted was the presence of a bird rookery, which an investigation has revealed is located approximately 4000 feet to the west of the westernmost property line of the expansion area, on the other side of the now closed GNOL facility. Due to the distance from the rookery, it is not anticipated that activity in the expansion area will not have an adverse impact on the rookery. Additionally, RBL will monitor the rookery on a yearly basis and, in the event it moves any closer, will time its construction activities at the expansion site such that nesting activities are not disturbed.

Another factor considered by RBL in assessing the continuing validity of the previous alternative sites assessment is the whether air quality conditions warrant any deviation from the previously reached conclusion. The next issue which was taken into consideration when RBL performed its analysis of alternative sites was the impact of air emissions from the facility. Although the impact of air emissions from the expanded landfill will be greatly minimized and mitigated by the LFGCCS to be installed at the facility (and, further, by the potential use of a LFGTE project, if such a project is ultimately implemented), consideration was, nonetheless, given to the issue when the preliminary determination was made to expand the existing RBL, rather than seek to permit a "stand alone" facility at some other location within the existing RBL service area. In this regard, attainment/non-attainment area status for the parishes within the service area was considered to be a factor, since landfills emit "ozone precursors" in the form of VOCs. Likewise, proximity to

adjoining parishes was considered since "transboundary" migration of air emissions could adversely affect non-attainment parishes' efforts to achieve attainment status.³² The Louisiana Air Quality Regulations, LAC 33:III.101, et seq., designate the "Adjourning Parishes" at Section 919 (Table 2). Of these parishes, four are in the existing RBL service area (Assumption, St. James, St. John the Baptist and St. Martin). As such, concerns over increasing VOC emissions in these parishes exist, providing a reason for avoiding those parishes in the context of an alternative sites assessment. This factor is consistent with, and supports, the original alternative sites assessment. The original assessment, although it did not consider the issue of air impacts, nonetheless limited the alternative sites assessment area, based on transportation costs from the primary area of waste generation, and so did not include an analysis of specific sites in these four Parishes. Transportation distance, coupled with the fact that these Parishes are designated as "adjoining parishes", is sufficient to exclude them from consideration in the present "re-assessment" of the alternative sites issue.

³² Concerning this issue, although there is no substantive limitation on emissions in "adjoining parishes", like those in non-attainment parishes, the regulations do provide that certain facilities in adjoining parishes must report VOC/VOX emissions in their yearly emissions statements under LAC 33:III.919. It is plausible that air emissions in adjoining parishes could adversely affect air quality in the non-attainment parishes, a result that could be avoided by not locating in adjourning parishes. Indeed, the concept of transboundary migration of air contaminants affecting other areas has been asserted by the LDEQ in its dealings with the EPA, as related to the impact of Houston on air quality in the Baton Rouge Non-attainment Area. It is also a valid concern for facilities contemplating locating in an adjourning parish that in the event the non-attainment area was expanded, a facility in an adjoining parish could be adversely affected. Finally, it should be noted that in the Coalition for Good Government v. Louisiana Department of Environmental Quality decision, the alternative sites assessment approved by the court included consideration of whether there "...were no air quality non-attainment parishes adjacent to the site."Id at page 729. Thus, this is a valid factor for consideration in the context of an assessment of alternative sites.

RBL's analysis of the issue of proximity to sensitive environmental areas confirmed that there is no newly discovered information or changed circumstances which would warrant a deviation from the original siting decision.

Question No. 2: If they are no changed circumstances or new information which weigh against utilizing the vicinity of the existing location, are there any new factors which weigh in favor of the existing facility location?

This question is the counterpart to Question No. 1, above. In assessing this issue, RBL first considered the Zoning Change, discussed above, which clearly weighs in favor of achieving the goals of the expansion project within the area now zoned "M-4". Initially, as the planning process leading to the decision to expand was undertaken, the area of the proposed expansion was zoned such that a "special use permit" was necessary for the project. The Zoning Change had not gone into effect, although RBL management was aware that the change was under study and that the use of the M-4 zoning district would probably be recommended. Based on the zoning then in effect, as well as the strong potential for the new zoning, RBL preliminarily determined that the proposed expansion would be the most environmentally and economically advantageous alternative. Prior to submission of the permit modification applications for the project, however, the zoning changes were implemented. This act confirmed RBL's preliminary determination and should be a vital aspect of the LDEQ's analysis of the alternative sites issue.

Of particular significance are the "buffer zone" considerations addressed by the Parish in the context of site specific requirements (fencing, landscaping) and area wide requirements (transitional zoning). The buffer zone, coupled with the unique "waste-specific" zoning of the expansion area, provides legally enforceable protections against conflicting land uses. RBL is aware of no other Parish within its service area with this unique zoning scenario and, hence, the decision to locate

within the "M-4" (waste activity specific) zoning area (i.e., in the immediate vicinity of the existing RBL) was confirmed.³³

The next new development which weighs in favor of utilizing the vicinity of the existing RBL for achieving the goals of the expansion is the potential (if not probable) development of a LFGTE project in the vicinity of the existing facility. Although the factors necessary for LFGTE development have been present at the site for some time, only recently have the prospects for the LFGTE project increased, with the issue being placed under serious consideration by a potential end user. Additionally, the recent increases in natural gas prices (and predicted shortfalls in natural gas supplies) are a factor providing a further impetus to LFGTE project development. As previously noted, the location of the existing RBL is **unique in all of the state** as far as its potential for being included in a LFGTE project and, hence, this factor weighs heavily in favor of utilizing the existing vicinity of the RBL as the location for achieving the goals of the expansion, since the potential benefits that accrue to the environment in the event a LFGTE project becomes a reality are enormous. Stated differently, the lack of the presence of factors which allow the implementation of

³³ It should be noted that due to uncertainty regarding the Zoning Change, during the site selection process used by RBL, the "final cut" of potential alternatives assessed included some alternative sites that ultimately did make it into the M-4 zone and some that did not. Thus, although the Zoning Change is discussed in the "First Phase" of the RBL alternative sites analysis, where the factors discussed are ordinarily used to completely exclude alternatives from consideration, the final alternative sites considered, under the "Second Phase" of the alternative sites assessment, include areas that were not so zoned. It was felt by RBL that an honest assessment of the alternative sites issue would note that the Zoning Change did in fact occur after much of the alternative sites analysis was completed and that a reassessment of the issue, with the importance of the Zoning Change emphasized, would only confirm the validity of the initial conclusion reached. It is also significant that the Zoning Change is discussed in the First Phase of the Assessment as it relates to whether there are "new factors" which impact the previously conducted alternative sites assessment, in either a positive or negative way.

a LFGTE project at other areas within the RBL service area confirmed the original decision by RBL to exclude such areas from consideration. Of course, a stand alone project within the recommended range of the potential end user would allow the benefits of a LFGTE project to be realized but, as explained below, other factors weigh in favor of the precise expansion location proposed by RBL.

A final "new factor" which impacts the issue of potential alternatives is the location of the proposed Hwy 90 C&D Waste Facility, which RBL hopes will serve as a long-term, contractually assured area for the disposal of Type III waste that would otherwise end up at RBL. This facility, as previously noted, is being created as part of a long-term plan for improved waste stream separation and the maximum possible preservation of environmentally protective "Subtitle D" airspace at the RBL facility for disposal of Type I & II waste. The goal is to encourage waste stream separation at pick-up points used by RBL, by providing an economic incentive to RBL's existing customers, since the act of separation by the customer can result in very real economic savings. This arrangement, as it is to be implemented, provides both economic and environmental benefits and is consistent with LDEQ's interpretation of its constitutional duties related to the consideration of alternatives.³⁴ The presence of this factor allowed RBL to confirm the location of its existing facility as the best location. Stated differently, the benefits that could accrue as a result of the relationship

³⁴In Louisiana Land Systems, Inc. (LLS) (unreported "Basis for Decision" dated December 6, 2000), the LDEQ denied a permit application for LLS, on a proposal that would have utilized the existing "waste vault" near the "Petro-Processors" Superfund site for a Type I, II and III landfill. The LDEQ decision denying the LLS permit noted, among other reasons for the denial, that the applicant had failed to adequately consider alternative projects, and specifically, the diversion of Type III Waste to an Type III facility, as an alternative project that would preserve airspace at the proposed facility for Type I and II Waste. In the present case, as previously noted, the proposed expansion of RBL in fact incorporates such a proposal into the expansion project.

with Hwy 90, L.L.C. helped RBL to exclude from consideration areas within the RBL service area that are too distant and, hence, a landfill there could not realistically divert Type III waste to the Hwy 90 facility as means of encouraging waste segregation and preservation of Type I & II capacity.

Thus, new developments have occurred which weigh in favor of utilizing the existing vicinity of RBL for achieving the goals of the expansion. Again, these developments weighed heavily in RBL's consideration of the issue of potential alternative sites and should also weigh heavily in the LDEQ's analysis of the issue. The next question asked by RBL in its assessment of the issue of alternative sites is the extent of benefits that accrue by virtue of the inherent benefits of an expansion vs. the creation of a stand alone facility to achieve the objective of the expansion project.

Question No. 3: Do the inherent benefits of facility expansion and/or "non-greenfield" development support the use of the existing facility location and are there any site specific factors which tend to diminish those benefits ?

In considering this issue, there are several issues to consider, the first of which is the concept of the inherent benefits of a "non-greenfield" development which, as discussed above, has been favorably considered by the courts in the context of the Coalition for Good Government v. Louisiana Department of Environmental Quality case. The second issue is whether there are any site specific factors which would tend to diminish those inherent benefits.

Simply put, the relative environmental impacts of siting an entirely new facility in a virgin area are much greater than simply expanding an existing facility in an area with desirable site characteristics. This is particularly true where an expansion laterally, if appended to an existing disposal area, allows greater capacity to be achieved through a shorter lateral expansion, by virtue of the ability to engineer a taller landfill. Thus, an expansion, as opposed to an entirely new facility,

takes less land to achieve the same capacity increase. Concerning the issue of site specific factors which might somehow affect that basic conclusion, the specific factors present at the proposed RBL expansion site act to enhance, rather than diminish, the inherent benefits of a facility expansion vs. a new facility development.

These specific factors include the Zoning Change, which will act to guarantee through legally enforceable requirements that an "inconsistent land use" scenario does not arise in the future. RBL is aware of no other potential alternative location existing **within its entire service area** where an expansion could be accomplished between two existing areas of solid waste activity, thereby providing a truly minimal impact as compared to other horizontal expansion scenarios³⁵

The only site specific factor which arguably mandates a contrary conclusion is the proximity of the expansion area to the New Orleans International Airport ("NOIA"). As previously discussed, however, while the NOIA has expressed reservations about the expansion, the ultimate authority on the issue, the FAA, has indicated that it is **NOT** opposed to the expansion as long as RBL develops a Bird Hazard Mitigation Plan for use at the facility. RBL is developing just such a plan, in conjunction with an expert on the issue, and does not oppose a permit condition requiring the plan to be implemented at the facility as a whole, prior to operations extending into the expansion area.

The inherent benefits of a facility expansion truly support the use of an expansion of the existing facility location to achieve the goals of the expansion. The site specific factors associated with the expansion area do not change this conclusion and, on balance, these site specific factors act

³⁵A good example is the Woodside Landfill in Livingston Parish, which proposed a horizontal expansion that resulted in **significant** community opposition, since the expansion would have brought the landfill closer to areas of inconsistent land uses (i.e., residential areas.).

to bolster the conclusion that there are inherent benefits to a facility expansion, as opposed to the creation of a separate facility not in the immediate vicinity of the existing RBL. Stated differently, the "green-field" development issue warrants elimination from consideration as alternative sites all areas in the existing service area of RBL which would not support an "expansion" of sorts of an existing solid waste disposal facility.

Based on an analysis of the foregoing three questions, which collectively constitute the "First Phase" of the RBL alternative sites assessment, RBL decided that the immediate vicinity of the existing RBL was still an appropriate location for solid waste disposal activity, consistent with the conclusion originally reached by RBL, the LDEQ and the court reviewing the LDEQ's decision to originally permit the facility in this area. Stated differently, the analysis of the First Phase of the alternative sites assessment helped RBL to exclude broad areas, or categories of areas, from consideration as viable alternative sites for achieving the goals to be achieved by the expansion.

However, although use of the precise location of the expansion proposed herein was supported by consideration of these questions, RBL recognized that there were a number of factors assessed that could support an alternate location in the **immediate vicinity of the RBL**, although not necessarily in the exact location proposed for the expansion. For example, the Zoning Change, since it provides for an area of M-4 zoning broader than the proposed expansion site, is one factor which warrants a continued assessment of the question of alternative locations, albeit in a narrower area than the service area of RBL. Likewise, the issue of a potential LFGTE project as support for the expansion arguably supports a continued assessment of potential alternative locations in the immediate vicinity of the RBL, since the additional source of landfill gas need only be within a given distance of other sources of landfill gas, as well as the potential end user(s) in the area, in order to

be a viable source of gas for a potential LFGTE project in the area, according to the LMOP participant that assessed the potential for a LFGTE project in the area. Additionally, many of those factors considered as supporting the original alternative sites assessment (such as favorable site geology, favorable site hydrology and favorable proximity in relation to "sensitive environmental areas", transportation infrastructure and primary sources of waste), and considered anew as part of the site selection process for the expansion, are present outside of the precise location for the expansion now proposed by RBL and, hence, these factors *could* also support an alternative location in the immediate vicinity of RBL. Finally, even application of the principal that allows exclusion of "green-field" alternative sites (sites that would not allow expansion of an existing solid waste facility) allows continued assessment of alternatives in the immediate vicinity of RBL, since there are more than one potential alternative locations in the immediate location of RBL where the benefits of this principal can be obtained.

For all these reasons, RBL conducted a further, more refined, assessment of potential alternative sites in a narrow area surrounding the existing RBL, in an effort to reach the most logical conclusion concerning the best location for achieving the goals to be achieved by the expansion project, while ensuring that the chosen location provides the maximum degree of protection against real and potential adverse environmental effects. The legal basis for such an assessment of specific alternative locations is found in the jurisprudence, as discussed below.

The primary decision addressing the issue of limitations on the area reviewed for alternatives is Matter of American Waste and Pollution Control Company, *supra*, and, more particularly, the decision of the First Circuit Court of Appeal which was affirmed therein, Matter of American Waste and Pollution Control Company, 633 So.2d 188 (La. App. 1 Cir. 1993). This decision warrants a

brief review to ensure that the methodology for assessing potential alternative sites for achieving the goals of the expansion is legally appropriate.

In the appeal court's decision, the LDEQ's decision³⁶ to grant the permit for the Cade II facility³⁷ was reversed, based in part on the erroneous application of a standard that provided for no "unreasonable" danger to the environment, rather than the one stated in the Save Ourselves decision, which requires that the adverse environmental impacts be minimized or avoided as much as possible consistently with the public welfare. This was the basis upon which the Supreme Court upheld the decision of the appeal court, but other portions of the appeal court's decision warrant attention, as they still stand as precedent.

In reviewing the secretary pro tempore's decision and the record of the matter, the appeal court noted that the record was deficient concerning the alternative sites assessment. In particular, the court was concerned with issues of geology as related to service area and the apparent limiting of the alternative sites analysis prior to the consideration of geological (i.e., environmental) factors. As noted by the court, "...it appears to us that when the area is geographically limited prior to considering generally known, subsurface geologic factors, the primary mission of DEQ is thwarted before it is begun." This statement was made after consideration of comments in the administrative record by opponents of the facility, who noted that there were no alternative sites considered in areas where the clay layer over the Chicot Aquifer was 100 feet thick, rather than only 3-5 feet thick.

³⁶The decision at the agency level in this matter was rendered by a Secretary *Pro Tempore*, appointed after the recusal of Secretary Paul Templet.

³⁷The permit application for the proposed location of "Cade I", which was located just 1.3 miles from the "Cade II" location, was denied by then LDEQ Secretary Martha Madden due to risks of groundwater contamination.

The American Waste case demonstrates that a permit applicant should not limit its review of alternative sites to an area smaller than the service area of the facility, unless there are compelling and logical reasons for doing so. It also stands for the proposition that where suspect conditions exist at the chosen site (in that case, poor geology and the presence of an important, heavily used aquifer immediately below the chosen site), the record should reflect that consideration of these factors occurred for the service area as a whole occurred, prior to any limitation of the area within which alternatives were considered. In the present case, RBL's "tiered" or "multi-phase" approach to assessment of alternative sites satisfies this mandate (to the extent it even applies in the context of an application for a facility expansion, where alternative projects and technologies have been thoroughly assessed³⁸) since the first phase of the RBL alternative sites assessment in fact considered a number of environmental factors, on a service area wide basis, prior to any limitation of the area in which alternatives are assessed.

Another decision which warrants attention is the Coalition for Good Government v. Louisiana Department of Environmental Quality decision. In that case, an alternative sites assessment was conducted which, by its very nature, allowed for the exclusion of large areas of the service area from consideration by an initial assessment of factors, followed by a more narrow assessment of alternatives in later "tiers" of the analysis. As previously noted, the applicant in Coalition for Good Government considered as a preliminary factor the fact that "green-field" developments are by their nature more destructive to the environment and, based on recognition of

³⁸There is some question concerning whether the alternative sites evaluation needs to be as rigorous under the circumstances present in this case, since there are no cases that address the inherently difficult issue of assessment of alternative sites in the context of a facility expansion, rather than the location of a new facility, as was the case in the American Waste decisions.

this fact, effectively excluded from consideration all areas that were not pre-existing facilities that could be modified to serve the purpose of the project. In this case, as noted in consideration of the "green-field" development issue discussed above, RBL has excluded from consideration all areas where a green-field development is the only option for achieving the purpose of the expansion. Additionally, RBL has considered whether there are any site specific factors associated with the vicinity of the existing RBL which would warrant not applying this principal and has determined that none exist.

Another decision which warrants attention is the in Matter of Shintech, Inc., 814 So.2d 20 (La. App. 1 Cir. 2002). In that case, the formal "service area" for the proposed facility was extremely large (i.e. the nation-wide market for its PVC product). Significantly, however, the source of its principal raw materials (vinyl chloride monomer) was the Dow Chemical facility located in Plaquemine, Louisiana and, based on "its business decision to locate the PVC facility in the vicinity of Dow's Plaquemine plant", it established a number of site selection criteria to guide the analysis and assessed a number of potential alternative locations in the general vicinity of the Dow plant. Despite arguments by permit opponents that the alternatives assessment was flawed, the Court upheld the LDEQ's decision to issue the permit. Significantly, LDEQ argued that the alternatives assessment was valid because even though geographically limited to an area smaller than the formal service area, it included more than one acceptable alternative location (as demonstrated below, the "limited" area searched for specific alternative sites by RBL also includes more than one acceptable location.). The fact that this decision was upheld by the courts is evidence of the fact that the business plans of the permit applicant can be taken into consideration when limiting the area within which the search for alternatives occurs, as long as the limitation does not appear to be, as was the

case in Matter of American Waste, an "arbitrary" limitation.³⁹ In the present case, of course, the original search area for alternatives was limited in a similar manner, by recognition of the fact that the primary source of waste for disposal at the RBL facility would be the city of New Orleans and that a given distance from this source of waste could make an alternative location infeasible to serve the primary source of waste. Similarly, the present alternatives search has been limited by this factor by way of the "re-assessment" of the issue of proximity to the primary areas of waste generation (confirmed by the most recent data, which shows that the original suppositions concerning the primary sources of waste for the RBL was in fact correct) and adequate transportation infrastructure.

A final decision which supports the methodology used by RBL is Matter of Petit Bois Landfill, 657 So.2d 633 (La. App. 1 Cir. 1995) In regard to the limitation of the alternative sites analysis to an area smaller than the actual service area of the facility, the Court noted that:

"... it appears inherently unreasonable in the mind of this Court to limit consideration of alternative sites to arbitrary geographical boundaries where the potential benefits and risks of the proposed facility will impact a multi-parish, if not a multi-state region.

This is not to say that, where a number of acceptable sites are found within a particular parish, the search for alternative sites must necessarily be expanded so as to encompass the entire service area . . . But in cases such as this, where only one of the evaluated sites within the optimum radius merits favorable consideration, the search radius should be expanded to incorporate a larger portion of the proposed service area." (emphasis supplied)

³⁹It should be noted that the only discernable reason for the limitation of the area searched for alternatives in the Matter of American Waste case was the fact that earlier in the planning process, there was a limitation on the service area, which was changed. As noted in the quoted critique of this approach by a permit opponent: " Waste Management picked this site with the tri-parish service area in mind and then they got greedy and decided they wanted a super landfill to take garbage from the whole state. **When they made that change they completely destroyed the line of reasoning they used to chose the site in the first place.**" (emphasis supplied).

This case makes it clear that a limited area for review of specific alternative sites is allowed, where the search for alternatives in that limited area does not result in only one site being given favorable consideration. Thus, it is appropriate for RBL to assess alternative locations in an area smaller than its service area, since there is a logical basis for the limitation and more than one suitable location was located in the smaller search area.

Based on the considerations mentioned above, RBL conducted an assessment of potential alternative locations in an area in the immediate vicinity of the existing RBL. That limited search area initially covered areas outside of the area now zoned M-4, in an area roughly within a three mile radius of the existing RBL facility, since it was believed that all alternatives in this area would allow the benefits of the Hwy 90 LLC / RBL relationship to be fully realized, while also allowing the potential for a LFGTE project to be realized and a number of "non green-field" sites (i.e. those areas already adversely impacted by solid waste activities) to be assessed. The three mile radius was also chosen since it is the area utilized under the solid waste regulations for a required analysis of a variety of environmental factors. Thus, an analysis of potential alternative sites within the area could be made, based upon a pre-existing detailed set of information (the previous RBL permit applications and decisions). A third, but related, basis for such a radius is that it is large enough to encompass more than one suitable alternative location and, hence, serves as a valid alternatives analysis under the reasoning of the Court in the Shintech case. All specific alternative sites considered in the initial assessment of sites within the three mile radius (eight sites in all), while located within this three mile radius area of the existing RBL facility, were actually within about one-half mile of the existing RBL facility, as a result of a common sense re-application of the green-

field developments principal (see discussion below). Two of the alternative sites originally assessed were located within what is now designated as M-4 zoning.

Since then, but before the expansion application was submitted, the Zoning Change was implemented. RBL believes that the effect of the Zoning Change is significant enough such that it could be considered as a "First Phase" factor for complete exclusion of alternatives, but also felt that it was important to truthfully convey to the LDEQ the fact that the Zoning Change occurred during the alternative sites assessment process. Thus, RBL has chosen to include the zoning status of the various specific alternative sites considered as an extremely important, and heavily weighted, "ranking" factor in the "Second Phase" of the alternative sites assessment. This phase has been re-analyzed with consideration of the Zoning Change, to ensure that the initial conclusion about alternative sites reached by RBL management in the planning process for the expansion was not altered.

Having narrowed the area of consideration in the foregoing manner, the analysis shifts to the selection and ranking of the alternative sites in Phase Two.

Within the three mile radius area, sites were selected for final consideration as follows. First, again applying the screening process based on consideration of higher adverse impacts associated with Greenfield development, areas not between or adjacent to existing land utilized for solid waste disposal were categorized as Greenfields and were not chosen as specific alternative locations to be further assessed. Areas categorized as "Greenfields" by the application of this principal include nearly all of the land within the three mile radius south of U.S. Hwy 90, with the exception of the areas adjacent to the Highway 90 Landfill, as well as all of the residential developments and high population density areas to the east and north of the existing RBL. Based

on this principal, areas were selected as potential alternative locations for further consideration. In addition to helping form the basis for specific site selection, this factor was used as a ranking factor, since the application of the principal has greater benefits in some areas, as opposed to others, depending on site specific factors such as proximity to residential areas.

The next portion of the ranking process was consideration of areas with status as, or proximity to, wetlands. Again, most of the area south of U.S. Hwy 90 fits within this designation, as does the area to the north of U.S. Hwy 90 and located to the west of the now closed GNOL. The proposed location for the Hwy 90 LLC facility does include approximately four (4) acres of wetlands which must be filled, but these wetlands clearly are not the high quality wetlands to the south of U.S. Hwy 90 or north of U.S. Hwy 90 and west of GNOL. Additionally, it is now believed that there are no jurisdictional wetlands on the proposed expansion site, which conclusion should be confirmed by the study currently underway.

The next factor considered in the ranking process was characterization of areas which qualify as prime farmland. Based on the February 1994 study of the issue, included within the alternative sites analysis conducted for the original RBL application, there are prime farmland soils on the west bank "natural levee" of the Mississippi River. In the immediate vicinity of RBL and the proposed site for the Hwy 90 LLC facility, these soils are primarily to the north of Live Oak Blvd. Significantly, it appears that these soils are located on only a small portion of the northeast side of the proposed Hwy 90 Landfill, in the area of an existing borrow pit. Hence, it could not be utilized for farming even if the permit was not granted. There are no prime farmland soils in the area of the proposed expansion and, in any event, the current location of the Jefferson Parish Sludge Lagoon and the zoning status of the expansion site would preclude its use for farming.

The next factor considered in the ranking process was proximity to residential areas. Within the 3-mile radius area under consideration, the greatest concentration of residential areas are on the east bank of the Mississippi River. In fact, this area is so densely populated that there is no area large enough to construct a landfill, much less one with the buffer zone provided at the proposed expansion location by way of the transitional zoning. On the West Bank, utilization of any area north of Live Oak Blvd. and east of South Kenner Blvd. would result in the facility being operated closer to residential areas than at the proposed location. The same may be said for areas west east of South Kenner Blvd. and north or northwest of GNOL.

Next, proximity to cultural, recreational or historic resources was considered. In this regard, the only such resource within the 3-mile radius area is the Salvador State Wildlife Management Area, the northern boundary of which extends into the area below U.S. Hwy. 90 as well as the recently discovered bird rookery.

Next, consideration was given to proximity to existing transportation infrastructure with emphasis on the ability of roads to provide safe ingress and egress to and from the facility.

Finally, consideration was given to the ability of the site to develop a high capacity by "piggy-backing" an existing facility, and hence using less acreage to achieve the capacity increase of the project.

Based on an analysis of the foregoing factors, it was determined that an acceptable area for the expansion would have the following characteristics and high rankings under each of the categories:

- 1) Adjacent to or between areas of existing solid waste disposal activity (to avoid the relatively higher adverse impacts which typically result from a green-field development) and would favorably compare to the other sites, all of which were selected with this principal in mind (this factor was weighted due to its significance;
- 2) In an area with minimal or no wetlands and, particularly, no high quality wetlands;
- 3) In an area with minimal or no high quality farming soils (i.e. "prime farmlands");
- 4) In an area separated, to the extent possible, from residential areas or other incompatible land uses;
- 5) In an area away from cultural, historic or recreational areas;
- 6) In an area that would allow for best utilization of existing transportation infrastructure;
- 7.) In an area that would be zoned "M-4";
- 8.) In an area that may have incidental benefits, such as the need to clean up the sludge lagoons for use of the expansion area.
- 9.) It would be well situated to take advantage of an existing landfill, and hence use less acreage to achieve the proposed capacity increase.⁴⁰

⁴⁰Of course, in addition to these favorable site characteristics, all of the specific sites selected for further assessment had the favorable characteristics of location in any area that could take advantage of a LFGTE project in the area, as well as the relationship between RBL and Hwy 90 LLC.

In the area under consideration, there are a number of specific areas which are either adjacent to or between areas of existing solid waste disposal activity and hence were selected for further consideration. These areas are:

- Area 1:** The area on the western border of GNOL, to the north of U.S. Hwy 90
- Area 2:** The roughly triangular tract situated between the eastern border of GNOL and western border of RBL
- Area 3:** The small triangular tract bordered on the south by U.S. Hwy 90, on the west by the eastern border of GNOL and on the east by Kelvin Landfill
- Area 4:** The area south of U.S. Hwy 90 and bordered on the east by the western boundary of the Area 90 Landfill
- Area 5:** The area south of U.S. Hwy 90 and bordered on the west by the eastern boundary of the Area 90 Landfill
- Area 6:** The area adjacent to the eastern boundary of the Kelvin Landfill tract (the proposed location for the Hwy 90 facility, but which still has significant acreage to the east of the Hwy 90 facility site, such that it could be developed for Type I and II disposal cells)
- Area 7:** The area north of RBL and bordered on the north by Live Oak Blvd.
- Area 8:** The area north of Live Oak Blvd. and situated roughly to the northeast of Kelvin Landfill and north of Area 6

Applying the ranking criteria to these areas, the following conclusions and rankings are reached. First, Area 1, although it is situated well away from significant areas of residential use, and prime farmland soils, it would require the filling of significant quantities of wetlands. The wetlands at issue are, it is believed, of a higher quality than the small amount of wetlands existing on Area 6. Additionally, although this area would allow for the application of the "non greenfield site" principal, since it would be adjacent to an existing solid waste disposal facility, the site specific factors of

wetlands and the newly discovered bird rookery act to reduce the beneficial effect of applying this principal. The site is outside of Jefferson Parish and is not, therefore, zoned M-4. There is no possibility of "piggybacking" on the GNOL facility, since it is now closed. Thus, the facility did not obtain additional points under the "acreage needed to achieve capacity" factor. Finally, there are no discernable "extra-benefits" to locating in this area, such as the need to clean up the sludge lagoons. For these reasons, Area 1 received a numerical ranking of 57.

Area 2 is believed to have no jurisdictional wetlands and, due to the location between existing landfills, the benefits of the application of the non-greenfield development principal are particularly high. In fact, Area 2 is ranked favorably in all of the remaining considerations. The only "problem" with Area 2 being unique to that site is the presence of large quantities of sewage sludge from the Jefferson Parish sludge lagoon. Addressing the presence of this material would substantially increase the initial cost of construction, a valid consideration in the site selection process⁴¹, and one which could affect its viability as a site for a Type III Waste facility, but there are significant incidental environmental benefits that would accrue in the event the expansion were permitted in this area. Accordingly, the site was given additional points for this factor. The narrow triangular shape of Area 2 would make development of the tract difficult as a stand-alone facility site, but since it could be developed as an expansion of the existing RBL, this site is well situated as regards the "acreage needed to achieve capacity" issue. Additionally, it is zoned M-4 and so gets additional points. The final numerical ranking for this site was 94.

⁴¹ See Coalition for Good Government, *supra*.

Area 3 ranked favorably from the standpoint of wetlands, proximity to residential areas and prime farmland, but is too small for the development of a large capacity stand-alone facility. It could, however, be piggybacked onto the existing Jefferson Parish landfill and hence would have been given additional points under the "acreage needed to achieve capacity" category, except for the fact that the Jefferson Parish Landfill accepts waste only from Jefferson Parish and, hence the capacity increase that would be allowed by piggyback engineering would not serve the purpose of the expansion. The area is not, however, zoned M-4. Area 3 was assigned a numerical ranking of 78.

Areas 4 and 5 share the same drawbacks. Both would require the filling of significant quantities of high value wetlands. Additionally, both (and particularly Area 4) would be closer to Salvador WMA and other large contiguous areas of high quality wetlands. The benefits of the development as adjoining an existing solid waste facility are not high as a result of these site specific factors. Neither area could "piggyback" on the existing Area 90 facility and hence were assigned no points under the "acreage needed to achieve capacity increase" factor. Neither area is zoned M-4. Although these areas rank well on Prime Farmlands and proximity to residential areas, they received low scores of 58 (Site 5) and 47 (Site 4).

Area 6, as previously noted, would require the filling of less than 4 acres of low quality wetlands. However, other factors weigh in its favor. Only a small portion of the proposed development would be on "prime farmland" soils (if at all), and this area could not be used for farming even if the permit were not issued, due to the existing borrow pit on that portion of the tract and, now, the zoning of the area. Area 6 is located near no cultural, historic or recreation areas and is well situated to safely take advantage of the existing transportation infrastructure. The area is

zoned M-4. The only drawbacks to the site include the fact that the population area nearest the facility, Waggaman, which is approximately 4000 feet distant, is closer to residential areas than many of the other locations. Particularly for a Type II Waste facility and the potential impacts from odors such facilities pose, this factor is important and, accordingly, this site received lower points in this category than some of the other sites. Finally, the site does not get points under the "acreage required to achieve capacity increase" category, since it would have to either piggyback on the Jefferson Parish Landfill (which serves only Jefferson Parish) or, onto the Hwy 90 facility if the Hwy 90 Facility is permitted and the eastern portion of the tract is considered. This would not, however, be possible since it will be Type III only. Area 6 - as a location for Type I & II disposal facility⁴² - was assigned a numerical ranking of 82.

Area 7 does not appear to have significant quantities of wetlands. There are, however, a number of drawbacks with the tract. First, due to its narrow shape, development would be difficult and a larger than required buffer zone would not be possible, thereby posing a potential risk of adverse aesthetic impacts when viewed from Live Oak Blvd. Additionally, it appears that the area is located on prime farmland soils and would result in a disposal facility substantially closer to the residential developments of Live Oak Manor and Floral Acres than the distance between Waggaman and the proposed location in Area 6. Additionally, the facility could not piggyback on an existing facility because the railroad track separates it from RBL. Finally, the area is not zoned M-4. For these reasons, Area 7 received a score of 53.

⁴²Consideration of the site for Type III facility would result in a higher score, since the proximity to residential areas issue would not be as important with low or no odor wastes disposed at the facility.

Area 8 does not appear to have significant quantities of wetlands. Like Area 7, however, a number of other drawbacks exist. It appears to be on prime farmlands. Additionally, a landfill at this location would be closer to incompatible land uses to the north than the distance from Area 6 to Waggaman. The area could not be piggybacked since it is separated from existing solid waste landfills by Live Oak Boulevard. Finally, development of a landfill to the north of Live Oak Blvd. would result in the crossing of a "boundary" (Live Oak Blvd.) which has historically separated the area's solid waste disposal activities from other land uses. This would be an unnecessary precedent in light of the favorable characteristics of other sites, and acts to reduce the benefits realized by its development next to existing solid waste activities. For these reasons, Area 8 received a score of 45.

Thus, in the final analysis, both Areas 2 and 6 rank highest for utilization as solid waste disposal facilities and would be suitable alternatives. Both have M-4 zoning, which is a positive factor. In the final analysis, however, Area 6 is best suited for Type III disposal, while Area 2 is best suited for Type I and II waste. The factors which nudge Area 2's score over Area 6 is that in the context of a Type I & II Waste facility, particularly, proximity to residential areas is important and Area 2 is farthest away from residential areas. Additionally, considerations associated with the presence of the sewer sludge lagoon in Area 2 weighed in favor of construction in Area 2 for a Type I & II waste facility, while the costs of same might be prohibitive for a Type III facility at that location. Finally, Area 2 obtained a higher score since the benefits of applying the non green-field development principal are highest in an area where existing solid waste disposal activity is present on both sides of the site and the site would allow for a piggyback development.

The proposed location for the expansion is the best location from both an environmental and economic standpoint, when assessing alternative locations for a Type I & II Waste facility. The choice of this location is supported by sound land use planning concepts, as well as the principals of law developed in the jurisprudence addressing the duties of the LDEQ as A Primary Public Trustee of the Environment. The local land use authorities have deemed the location appropriate under a standard which requires that it take into consideration many of the factors which LDEQ must address in its "alternative sites analysis. Clearly, there are no alternative sites which would offer more protection to the environment than the proposed expansion site, without unduly curtailing non-environmental benefits.

E. Are There Mitigating Measures Which Would Offer More Protection to the Environment than the Facility as Proposed Without Unduly Curtailing Non-environmental Benefits?

The mitigating measures to be utilized at the expansion site, as set forth in the application for modification, either meet or exceed all applicable regulatory requirements. A review of the primary mitigation systems and techniques demonstrates that there are no mitigation measures which would offer more protection to the environment than those proposed without unduly curtailing non-environmental benefits. Although discussed above in great detail in response to the question concerning avoidance or minimization of adverse environmental impacts, a listing of mitigation measures incorporated into the design and operational plans of the facility demonstrates that there are no additional mitigation measures which would offer more protection to the environment than the facility as proposed without unduly curtailing nonenvironmental benefits.

- a.) **Liner System:** RBL's liner system, which utilizes a unique secondary liner with significantly greater protection against the migration of leachate than the secondary

liner required under the regulations, provides a high level of environmental protection for groundwater.

- b.) **Leachate Collection and Treatment System:** RBL's design and operational plans call for the separation of leachate from contact stormwater, collection of leachate and treatment of same in its expanded treatment pond. This system protects surface water quality by removing the most contaminated portion of the wastewater stream.
- c.) **Surface Run-off Controls and Other Measures to Reduce Generation of Leachate:** RBL's surface run-off control system is designed to minimize the amount of leachate generated by expediting drainage of water from the working face of the landfill and treating it separately from the leachate. Additionally, the use of final cover will reduce permeation and the creation of leachate.
- d.) **Landscaping/Visual and Access Barriers:** As discussed in the Application, and as required by the Zoning Change, landscaping will be incorporated into the facility to enhance the appearance of the facility. Additionally, the facility will be surrounded by a solid fence to restrict access and reduce visibility.
- e.) **Groundwater Monitoring:** An extensive groundwater monitoring system will ensure that if groundwater contamination does occur, in spite of the control measures incorporated into the facility, it will be rapidly detected to allow corrective measures to be implemented. Addition of this capability to the west of the existing RBL will allow potential contamination from GNOL to be more rapidly detected than it would otherwise, since GNOL has no groundwater monitoring system that meets current regulatory requirements.

- f.) **An Efficient Methane Collection and Control System:** RBL's expanded facility will safely and efficiently collect and control methane gas to avoid risks associated with buildup of methane gas and the release of hazardous air pollutants. The LGCCS to be used constitutes "Maximum Achievable Control Technology".
- g.) **Operational Controls:** RBL's Facility Operations Plan, Stormwater Pollution Prevention Plan and Industrial Waste Acceptance Quality Assurance/Quality Control Plan assure that only appropriate wastes are accepted at the facility and that other potential adverse impacts are minimized. Use of the unique GPS assisted compaction technology at the expanded facility achieves superior compaction rates and provides one of the benefits that "bioreactor" technology would allegedly achieve - without the risks.
- h.) **Business Plans:** The proposed expansion is part of an overall plan, involving the Hwy 90 LLC facility, to encourage maximization of waste stream separation and, hence, to provide the economic and environmental benefits that waste stream separation provides.
- i.) **Locational Characteristics:** Locating the facility at the Site, rather than an alternative location, is one mitigation technique which warrants discussion. As noted above, utilization of the expansion site greatly minimizes real and potential environmental costs due to land use considerations and the absence of any sensitive environmental areas in proximity to the expansion site. The fact that the expansion will occur between two existing solid waste disposal facilities further minimizes the adverse impacts that would result from siting a new facility to achieve the same

disposal capacity. The site for the expansion is zoned M-4 and hence has legally enforceable protections against inconsistent land uses arising in the vicinity. The facility is located maximize the potential for implementation of a LFGTE project in the area, which would have significant environmental benefits. Finally, the advantages of the favorable geologic and hydrogeologic conditions at the Site provide significant protection against groundwater contamination.

- j.) **Flood Protections:** The expansion area, like the existing facility, is located within the hurricane protection levee. Additionally, the facility addresses location in a flood plain by inclusion in a facility levee which provides two feet of freeboard above the 100 year flood level. The Parish itself continually reassesses its pumping capacity needs, based on the level of development in the Parish, and increases pumping capacity to address decreases in the carrying capacity of an area.
- k.) **Safety Risks:** Consistent with the recommendations of the FAA, RBL is preparing a Bird Hazard Mitigation plan for use at the expanded facility, to mitigate any risk, however remote, related to the location of the NOLA.

In summary, the mitigation measures at the site provide significant environmental protections. Clearly, they provide the maximum possible environmental protection, without unduly curtailing non-environmental benefits.

On motion of Mr. Jones, seconded by Mr. Broussard, the following ordinance was offered as amended:

SUMMARY NO. 20810 ORDINANCE NO. 21787

A ordinance amending Ordinance No. 3813, as amended by Ordinance No. 7530 of the Parish of Jefferson, adopted by the Jefferson Parish Council on the 28th day of August, 1958, more particularly creating a new ARTICLE XXXIII INDUSTRIAL DISTRICT M-4, and amending the zoning text to permit landfills and other related uses only in Industrial District M-4, and the subsequent subsections re-lettered accordingly and to reclassify that property in the area as indicated on the map dated 10/28/02 by Coastal Engineering and Environmental Consultants, Inc. (PARISHWIDE)

WHEREAS, Jefferson Parish retained the services of Coastal Engineering and Environmental Consultants, Inc. to conduct a text study of the Comprehensive Zoning Ordinance to review landfill regulations and other related uses and a zoning area study to reclassify that property in the area as indicated on a map dated 10/28/02 by Coastal Engineering and Environmental Consultants, Inc.; and

WHEREAS, Coastal Engineering and Environmental Consultants, Inc. has recommended the creation of a new Article XXXII.5 Industrial District M-4 to permit landfills and other related uses; and

WHEREAS, Coastal Engineering and Environmental Consultants, Inc. has recommended that property in the area as indicated on a map dated 10/28/02 by Coastal Engineering and Environmental Consultants, Inc. be reclassified from S-1, OW-1, and U-1 to C-1, OW-1, M-1, and M-4, and

WHEREAS, the Planning Director of the Parish of Jefferson has caused to be duly advertised, as prescribed by law, a public hearing in connection with the proposed text amendments to the Jefferson Parish Comprehensive Zoning Ordinance and zoning reclassification of that property in the area as indicated on the map dated 10/28/02 by Coastal Engineering and Environmental Consultants, Inc.; and

WHEREAS, a public hearing was held by the Planning Advisory Board in accordance with law. Now, therefore,

THE JEFFERSON PARISH COUNCIL HEREBY ORDAINS:

SECTION I. That Article I In General, Sec. 40-3 Definitions, of the Jefferson Parish Code of Ordinances is hereby amended to add the following to read as follows:

Composting facility shall mean a facility where organic matter is processed by natural or mechanical means to aid the microbial decomposition of the organic matter. Composting facility as defined in this section shall not include small-scale residential composting for use by the resident.

Solid waste landfill shall mean an establishment primarily engaged in operating landfills for the disposal of nonhazardous solid waste or the combined activity of collecting and/or hauling nonhazardous waste materials within a local area and operating landfills for the disposal of nonhazardous solid waste.

SECTION II. That Article XXXII Industrial District M-3, Secs. 40-607—40-620 Reserved, of the Jefferson Parish Code of Ordinances is hereby amended to read as follows:

Secs. 40-607—40-610. Reserved.

SECTION III. That Chapter 40 Zoning of the Jefferson Parish Code of Ordinances be amended by adding Article XXXII.5 Industrial District M-4 to read as follows:

ARTICLE XXXII.5 INDUSTRIAL DISTRICT M-4

Sec. 40-611. Description.

This district is intended solely for industrial activities relating to or involving waste collection, handling and disposal facilities. The purpose of this district is to allow the normal operation of state permitted landfills and other waste handling, recycling and disposal establishments under such conditions as will protect adjacent land uses. Whenever practical, this district should be buffered from nearby residential areas by more restrictive zoning.

Sec. 40-612. Permitted uses.

- (1) Any existing use shall be considered a conforming use and may continue to operate, provided it does not discontinue such use for a period of more than one (1) year.
- (2) Unless otherwise provided for in this section, the following uses, as defined and listed in the 2002 North American Industrial Classification System, shall be permitted:

- a. Solid Waste Collection (NAICS Code 562111). This industry comprises establishments primarily engaged in one or more of the following:
 - 1. Collecting and/or hauling nonhazardous solid waste (i.e. garbage) within a local area;
 - 2. Operating nonhazardous solid waste transfer stations; and
 - 3. Collecting and/or hauling mixed recyclable materials within a local area.
 - b. Other Waste Collection (NAICS Code 562119). This industrial classification comprises establishments primarily engaged in collecting and/or hauling waste (except nonhazardous solid waste and hazardous waste) within a local area. Establishments engaged in brush or rubble removal services are included in this industry.
 - c. Solid Waste Landfill (NAICS Code 562212). This industrial classification comprises establishments engaged in operating landfills for the disposal of nonhazardous solid waste or the combined activity of collecting and/or hauling nonhazardous solid waste materials within a local area and operating landfills for the disposal of nonhazardous solid waste.
 - d. Other Nonhazardous Waste Treatment and Disposal (NAICS Code 562219). This industrial classification comprises establishments primarily engaged in operating nonhazardous waste treatment and disposal facilities (except landfills, combustors, incinerators and sewer systems or sewage treatment facilities) or the combined activity of collecting and/or hauling of nonhazardous waste materials within a local area and operating waste treatment or disposal facilities (except landfills, combustors, incinerators and sewer systems, or sewage treatment facilities). Compost facilities are included in this industry.
 - e. Material recovery facilities (NAICS Code 562920). This industrial classification comprises establishments primarily engaged in operating facilities for separating and sorting recyclable materials from nonhazardous waste streams (i.e., garbage) and/or operating facilities where commingled recyclable materials, such as paper, plastics, used beverage cans, and metals, are sorted into distinct categories.
 - f. Other facilities or activities involving the treatment, storage, disposal or handling of wastes regulated by the United States Environmental Protection Agency, the Louisiana Department of Environmental Quality, the Louisiana Department of Health and Hospitals and the Louisiana Department of Natural Resources, which uses shall require appropriate permits from the above listed agencies.
- (3) Hazardous, nuclear or radioactive waste treatment, storage, or disposal facilities shall not be permitted.
 - (4) Uses described in Sec. 40-612(2) shall not be allowed in any area of Jefferson Parish except the M-4 Industrial District.
 - (5) Development within the M-4 Industrial District shall meet all federal, state and local fire, safety and building codes, and all other applicable codes.
 - (6) Approval from the Jefferson Parish Council, as provided for in Article XL (Special Permitted Uses) shall not be required in the M-4 District for those uses described in Section 40-612(2).

Sec. 40-613. Height regulations.

Height limits shall be in accordance with all applicable federal and state regulations.

Sec. 40-614. Area regulations.

- (1) Setbacks.

- a. All uses must comply with any perimeter setbacks, buffering and security requirements mandated by federal and/or state law.
- b. Required setbacks between M-4 uses shall be in accordance with federal and state regulations.
- c. There shall be a minimum two hundred (200) foot setback between M-4 uses and other nonresidential zoning districts or public streets and a minimum five hundred (500) foot setback between M-4 uses and any residential zoning district. Private service roads may be located within the required setback area provided they are not used for any waste hauling of any kind or used by any vehicles to discharge waste. The setbacks may also include any drainage or private driveways necessary to access a permitted use.
- d. Variances to the minimum setback requirements between M-4 uses and other zoning districts shall not be granted, except upon a finding by the Jefferson Parish Council that granting the variance will not be detrimental to the public welfare or seriously affect or be injurious to other property or improvements in the area in which the property or improvements in the area in which the property for which the variance is sought is located.
- e. In the event any of the above regulations related to setbacks are in conflict with other local, state, or federal regulations, the more restrictive shall govern.

(2) Lot area.

- a. All uses shall have a minimum size of thirty (30) acres.

Sec. 40-615. Landscape and buffer requirements.

- (1) The first twenty (20) feet from any property line which abuts an improved public street shall be landscaped and buffered by trees, shrubs, earth berms, or a combination of the same. In no event shall such buffer be less than seven (7) feet in height.
- (2) Within the required setback areas, existing vegetation shall not be disturbed or removed except for paved access areas, landscaping, and security fencing.
- (3) A minimum seven (7) foot solid fence shall be provided around the operations. The fence shall not be located within the required setback area.
- (4) In the event any of the above regulations related to landscaping and buffering are in conflict with other local, state, or federal regulations, the more restrictive shall govern.

Sec. 40-616. Site plan review.

- (1) Variances to the requirements in Sec. 40-615, Landscape and Buffer Requirements, may be granted by the Jefferson Parish Council, upon recommendation by the Planning Department and Planning Advisory Board, provided the following criteria are met:
 - a. Variances to the fencing provisions may be granted provided the applicant can demonstrate that sufficient tree cover exists in the setback area and will be an adequate substitute for the required solid fence. Tree cover must be at least fifty (50) feet in depth.
 - b. Other variances to the landscape and buffer requirements may be granted provided that:
 1. The applicant can demonstrate a demonstrable hardship in meeting such requirements.
 2. An alternative means of satisfying the requirements is proposed to mitigate the variance.
 - c. Site plans detailing the variances and proposed mitigation shall be submitted to the Planning Department along with

any other information deemed necessary to process that variance request.

- d. The applicant shall deposit with the Jefferson Parish Council, through the Planning Department, a fee in the sum of two hundred dollars (\$200.00) for each acre of land or portion thereof upon which the variance is requested, the maximum fee for acreage or portion thereof shall not exceed five thousand dollars (\$5,000.00) to cover the approximate cost of processing such application.

- e. Upon receipt of complete site plans, the Planning Department shall process the request in accordance with Article XLVIII, Changes and Amendments, for general procedures not specified in this section.

Sec. 40-617. Compliance for uses existing at the time of passage of ordinance.

- (1) Landfills and other uses permitted under the M-4 Industrial District that existed prior to the passage of the requirements in this ordinance shall be brought into compliance with all provisions of this ordinance under the following condition:

- a. Application and receipt of a permit from any state or federal agency to expand existing operations.

Sec. 40-618. Off-street parking requirements.

Shall be provided as set forth in Article XXXV, Off-street Parking and Loading Regulations.

Sec. 40-619. Loading zone requirements.

Shall be provided as set forth in Article XXXV, Off-street Parking and Loading Regulations.

Sec. 40-620. Reserved.

SECTION IV. That Article XXXIV Unrestricted District U-1, Sec. 40-642(1) of the Jefferson Parish Code of Ordinances is hereby amended to read as follows:

Sec. 40-642. Permitted uses.

In U-1 Districts only the following uses of property shall be permitted:

- (1) A building or land may be used for any purpose whatsoever not in conflict with any ordinance of the Parish of Jefferson, with the exception of hazardous, radioactive or nuclear waste treatment, storage, or disposal facilities, and uses described in Sec. 40-612(2), which shall not be permitted under any condition and the following uses which shall be permitted only with the approval of the Jefferson Parish Council, and only when not located within three hundred (300) feet of any use other than commercial or industrial.

(11)

Delete Sec. 40-642(11) in its entirety.

SECTION V. That the zoning classification of that property in the area indicated on a map entitled Waggaman Study Area Proposed Zoning, dated 2/13/03, prepared by the Planning Department be reclassified from S-1, OW-1, and U-1 to C-1, OW-1, M-1, M-4, and CPZ, all more clearly shown on said map which is hereby attached and made part of this ordinance.

SECTION VI. That the Planning Director of the Parish of Jefferson is hereby directed, authorized and empowered to make the necessary and appropriate changes and amendments to the Jefferson Parish Comprehensive Zoning Ordinance, more particularly Sec. 40-3, Secs. 40-607—40-620, and Sec. 40-642, and Sheet No. 5 of the Official Zoning Map thereof, designating the above mentioned and described property as being reclassified to C-1, OW-1, M-1, M-4, and CPZ.

SECTION VI. That the Chairman or in his absence, the Vice-Chairman of the Parish Council of Jefferson Parish is hereby empowered, authorized and directed to sign all documents and acts necessary and proper in the premises to give full force and effect to this ordinance.

The foregoing ordinance having been submitted to a vote, the vote thereon was as follows:

YEAS: 7 NAYS: None ABSENT: None

The ordinance was declared to be adopted on this the 26th day of February, 2003, and shall become effective as follows, if signed by the Parish President, ten (10)

days after adoption; thereafter, upon the signature by the Parish President, or, if not signed by the Parish President, upon expiration of the time for ordinances to be considered finally adopted without the signature of the Parish President, as provided in Section 2.07 of the Charter. If vetoed by the Parish President and subsequently approved by the Council, this ordinance shall become effective on the day of such approval.

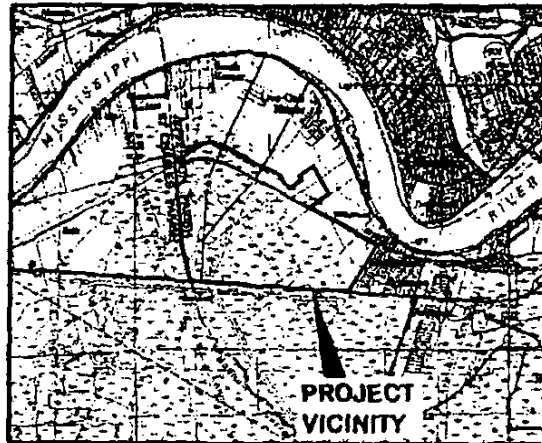
THE FOREGOING IS CERTIFIED
TO BE A TRUE & CORRECT COPY

Terrie T. Rodrigue

TERRIE T. RODRIGUE
PARISH CLERK
JEFFERSON PARISH COUNCIL

WAGGAMAN AREA ZONING STUDY

Jefferson Parish, Louisiana



*A Zoning Study of Lands Located in the
Vicinity of the Jefferson Parish Sanitary Landfill
Waggaman, Louisiana*

Prepared for

Jefferson Parish Planning Department

Prepared by

**Coastal Engineering and
Environmental Consultants, Inc.**

In cooperation with

**University of New Orleans
Real Estate Market Data Center**

January 2003

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EXHIBITS

- Exhibit 1: Vicinity Map
- Exhibit 2: Existing Zoning Layout Map and Official Zoning Map Sheet 5
- Exhibit 3: Proposed Zoning Layout Map
- Exhibit 4: 4.1 - Draft Map Change Ordinance
 4.2 - Draft Language for M-4 Industrial District
- Exhibit 5: Forecast of Solid Waste for Type 1 Landfills in Jefferson Parish, LA
A supplemental economic analysis report prepared under separate cover by Dr. Wade Regas, Director, Real Estate Market Data Center, University of New Orleans, College of Business

STUDY AUTHORIZATION

Jefferson Parish Council Resolution No. 97536 amending Resolution No. 95236, dated December 12, 2002 authorized the Planning Department and Planning Advisory Board to conduct a zoning study of the area bounded by U.S. Highway 90, Glen Della Canal, Union Pacific Railroad, Modern Farms Road, Foundry Road, Lake Marion Lane, Entergy Right-of-way, and the St. Charles Parish Line (see Exhibit 1, Vicinity Map) with the intent of reclassifying said area from its existing districts to the most appropriate zoning district(s). A Notice to Proceed with the subject zoning study was issued by the Parish to Coastal Engineering and Environmental Consultants, Inc. (CEEC) on June 4, 2002, in accordance with a CEEC proposal dated May 1, 2002, and the engineering agreement between the Parish and CEEC for miscellaneous environmental services dated April 14, 2000.

CEEC acquired the services of Dr. Wade Ragas, Director, University of New Orleans College of Business Real Estate Market Data Center, to conduct an economic needs analysis for solid waste landfills on the westbank of Jefferson Parish. (See Exhibit 5: *Forecast of Solid Waste for Type I Landfills in Jefferson Parish, LA, 2002 to 2050*).

STUDY OVERVIEW

A review of existing zoning and current land uses within the study area indicated that the majority of the land is currently being used for solid waste disposal. (See Exhibit 2: Existing Zoning Layout).

The UNO study suggested that most of the land within the study area would be needed for landfill expansion within the next 50 years. This report recommends that all lands within the study area be rezoned to allow for landfill expansion and to create transitional zoning districts to buffer residential uses from landfill operations. Proposed zoning changes are depicted on a map included herein as Exhibit 3. A draft ordinance to enact the proposed zoning changes is included herein as Exhibit 4.1.

This report also recommends that the Planning Department establish a new zoning district, *M-4 Industrial*, composed of lands relating to, or involving, waste handling and disposal facilities. Draft language for this new zoning district is included herein as Exhibit 4.2.

CONCLUSIONS AND RECOMMENDATIONS

The analysis and findings of this report will be provided to the Jefferson Parish Planning Department and the Jefferson Parish Planning Advisory Board, who will make final recommendations to the Jefferson Parish Council. Therefore, the reader is cautioned to remember that draft ordinances and proposed zoning changes contained herein are subject to change following review by appropriate Parish representatives and officials.

ZONING REVIEW

FINDINGS:

1. The original study area included 1905 acres bounded on the west by South Kenner Road; on the east by Live Oak Boulevard, on the south by U.S. Highway 90 and on the north by the Union Pacific Railroad. The study was expanded to include an additional 1314.5 acres abutting the original boundary on the east, west and north.
2. The focus of this report is the area of land located in Township 13 South, Range 22 East, Southeastern Land District of Louisiana, West of the Mississippi River, Jefferson Parish bounded by U.S. Highway 90, Glen Della Canal, Union Pacific Railroad, Modern Farms Road, Foundry Road, Lake Marion Lane, the Entergy Right-of-way, and the St. Charles Parish Line. (See Exhibit 1: Vicinity Map).
3. Current zoning for the study area is depicted on the Official Zoning Map of Jefferson Parish, Sheet No. 5, as approved by Council Ordinance No. 3813 adopted by the Jefferson Parish Council on the 28th day of August 1958, as amended by Council Ordinance No. 7530 and last amended on September 12, 1989 by Council Ordinance No. 17812. (see Exhibit 2).
4. Within the study area are two existing Type I (industrial, commercial and residential waste disposal) landfills, River Birch (324 acres) and the Jefferson Parish Sanitary Landfill (628 acres). Also, within the subject study area is a proposed Type III (construction/demolition debris disposal) landfill of 99 acres to be operated by River Birch. Another 13.6 acre tract, within a 78.5-acre site on the western edge of the study area adjoining the River Birch Type I facility, contains a closed sewage sludge disposal site.
5. Land adjacent to the study area was previously used for solid waste related activities. North of the Jefferson Parish landfill site, across Live Oak Blvd., is an 87-acre soil borrow pit area once used to obtain cover for the Parish landfill. West of the study area boundary is the 379-acre Greater New Orleans Landfill, which was closed in 1995. South of U.S. Highway 90, and across from the study area, is another 194-acre landfill site, which closed in the early 1990s.
6. U-1 Unrestricted is the largest zoning district in the study area, followed by S-1 Suburban. Spot commercial and industrial zoning exists along Live Oak Blvd. and U.S. Highway 90. Existing zoning to buffer waste disposal facilities from residential development is in place west of the intersection of Live Oak and the rail road track.
7. Transitional zoning is needed south and east of the intersection of Live Oak and the railroad track .
8. An elementary school is located just outside the study's perimeter on Willswood Road.

9. The major existing land use is solid waste disposal. Otherwise, the study area is undeveloped, with the exception of a small parcel along US Highway 90 that is the site of a commercial auto racing facility. Development on that parcel includes viewing stands and an oval shaped dirt racetrack. There are no non-conforming structures or uses in the study area.
10. The River Birch Landfill within the study area has become the regional landfill site for most parishes south of Lake Pontchartrain, as well as, Terrebonne and Lafourche parishes. The study area is within the Federal Hurricane Protection Levee System, which affords a higher level of storm surge damage protection than other unprotected potential landfill sites in the parishes of Jefferson, St. Charles, Terrebonne, or Lafourche.
11. The study area appears to have sufficient acreage with appropriate soil conditions and roadway access to support regional waste disposal in the New Orleans metropolitan area for the next 25 to 50 years.
12. The Jefferson Parish *Comprehensive Zoning Ordinance* does not currently have an appropriate zoning district to effectively plan and develop the growth of waste disposal facilities within the study area.
13. Creation of a special-use zoning district for solid waste disposal, and the use of commercial zoning to establish a buffer between residential land uses and waste disposal facilities, will allow for orderly development of the study area and insure that residential growth occurs at an appropriate distance from the edge of operating landfills.
14. Reclassifying the study areas now zoned U-1 Unrestricted and S-1 Suburban to a zoning category specific to solid waste operations would insure that residential development does not occur within the study area, and would allow landfills to expand at a rate sufficient for accommodating future waste disposal needs.
15. Rezoning the frontage of U.S. Highway 90 and Live Oak Boulevard to commercial and light industrial uses would accommodate suitable commercial development in the area and provide a buffer between residential districts and the solid waste disposal district. (see Exhibit 3: *Proposed Zoning Layout Map*).
16. A long history of studies focusing on negative externalities such as sound, sight or smell have found few, if any, impacts to residential developments which are located more than 1,500 feet from a noise or smell emitting facility. Therefore, areas across from Live Oak Boulevard should also be zoned commercial or light industrial to provide additional buffering for residential neighborhoods.

**STUDY TEAM RECOMMENDATIONS
TO THE PLANNING DEPARTMENT:**

The study team's recommendations to the Planning Department are as follows:

1. The Planning Department should create a new zoning district, M-4 Industrial, composed of lands relating to, or involving, waste handling and disposal facilities (see Exhibit 4.1). The reasons for creation of this new district include:
 - A. The Jefferson Parish *Comprehensive Zoning Ordinance* generally permits a landfill in the U-1 Zoning Classification. However, this classification also permits residential development. Residential development and solid waste disposal facilities are not compatible land uses.
 - B. Creation of a special zoning district for solid waste disposal facilities will confine waste disposal activities to specific areas away from residential development, and insure adequate space for the Parish's future solid waste disposal needs.
 - C. The Planning Department should rezone Areas 1-15 as shown on a map include herein as Exhibit 3, from U-1 Unrestricted District, S-1 Suburban District, and OW-1 Office Warehouse District, as follows:
 - Areas 1, 2, 4, and 5 from U-1 unrestricted to M-1 industrial;
 - Area 6 from OW-1 office warehouse to M-1 industrial;
 - Areas 7 and 8 from S-1 suburban to C-1 neighborhood commercial;
 - Areas 11, 12, 13, 14, and 15 from S-1 suburban to M-1 industrial;
 - Areas 9 and 10 from S-1 suburban to OW-1 office warehouse; and
 - Area 3 from S-1 suburban and U-1 unrestricted to M-4 industrial;

RECOMMENDATIONS OF THE PLANNING ADVISORY BOARD:

The Planning Advisory Board will review the information contained herein and the Planning Department's recommendation. Their concurrence, non-concurrence or concurrence with a list of exceptions will be provided following that review.

SUMMARY OF PUBLIC HEARING:

Public hearings will be scheduled in accordance with the Jefferson Parish Code of Ordinances.

HISTORY OF THE STUDY AREA:

The study area is at the western edge of the westbank of Jefferson Parish and was historically used for agriculture and cattle grazing. Development in the surrounding area was largely small farms or rural residences. In 1964, Kelven, Inc. acquired that portion of land known as Modern Farms Subdivision, which came to be known as the Kelven tract. An open-air dump was established on the property and operated until 1979 when Jefferson Parish purchased the property. The Parish established an up-to-date landfill facility on the site that has served the solid waste disposal needs of the Parish since 1982. The Kelven tract is now known as the Jefferson Parish Sanitary Landfill.

The Greater New Orleans Landfill operated in the area west of South Kenner Road until 1995, when the Louisiana Department of Environmental Quality, after years of compliance issues, ordered the site to be properly closed.

River Birch, Inc. purchased property in the area in 1991, applied for, and received a permit to operate a solid waste landfill. The River Birch Sanitary Landfill began receiving solid waste in 1999. River Birch has also received approval for a construction and demolition disposal site.

The rural/suburban type neighborhoods north of the study area have recently seen an influx of upscale residential development and new streets are being constructed.

Act 537 of the Legislature of Louisiana, 1954, gave parishes the authority to regulate land use through adoption of a zoning ordinance. Council Ordinance No 3813, dated August 28, 1958, established comprehensive zoning in Jefferson Parish. Ordinance No. 7530 dated January 27, 1966 amended Ordinance No. 3813 and established Official Zoning Maps for all areas of the Parish. Zoning districts within the study area, as depicted on Sheet 5 of the Official Zoning Maps for Jefferson Parish, included U-1 Unrestricted and S-1 Suburban. Zoning within the study area was last amended by Council Ordinance No. 17812, adopted on September 13, 1989, which amended Ordinance No. 7530, and empowered the Planning Director to alter and amend Sheet No. 5 of the Official Zoning Map to rezone Willswood Plantation Parcels E and G, within the study area, and O, R and S, east of the study area boundary, as C-1 Neighborhood Commercial Districts (see Exhibit 2: Official Zoning Map Sheet 5).

ANALYSIS:

A complete analysis of the demand for solid waste landfills in Jefferson Parish over the next 50 years was conducted by the University of New Orleans (UNO) College of Business, Real Estate Market Data Center (included herein as Exhibit 5). Based on the findings of that report, a proposed zoning map was developed which would provide ample space for solid waste disposal use and provide buffers along the perimeter of the tract of land inside Live Oak Blvd.

The UNO supplemental report suggested that at least 509 additional acres of landfill will be required by 2050 to meet the expansion needs of the existing solid waste disposal facilities. Based on that finding, and the need to site residential development away from waste disposal facilities, the study team recommended that the Planning Department rezone the U-1 Unrestricted and S-1 Suburban districts within the study area to a new zoning category, M-4 Industrial. This new zoning category should be created specifically for land to be used for siting of waste handling and disposal facilities and, to avoid user conflicts, all uses not compatible with waste handling facilities should be prohibited.

Landfills are an essential public service. However, they are not the most desirable land use. Perimeter buffer zones, designed to reduce off-site impacts, are mandated by federal, state and local laws. The required perimeter buffer increase the land area needed for solid waste uses. A survey of landfill regulations found perimeter buffers ranging from 100 feet to one (1) mile (see Table 4 at the end of this section). The clustering of landfills in the study area provides an opportunity to maximize the capacity of the sites, since perimeter buffer requirements can be minimized when one landfill

abuts another. The study area provides ample room for growth of the Jefferson Parish Sanitary Landfill and other waste handling and disposal facilities already operating within the study area.

The Tables 1 -3 show the results of an analysis of potential landfill acreage efficiency for three different land configurations: equilateral triangle, square and circle. In each case a one (1) acre usable disposal cell was assumed. The buffer area was assumed to be 200 feet on either side, as required by current Louisiana Department of Environmental Quality regulations. The usable cell area was increased in one-acre increments to calculate the efficiency ratio of usable land to buffer area up to 50 acres.

As expected, the circle, the most unlikely parcel shape, was the most efficient, reaching a 51% efficiency rating at 18 acres. The square reached 51% efficiency at 23 acres and the triangle reached 51% efficiency at 30 acres. Therefore it is recommended that the minimum lot size in the M-4 Industrial Zoning District be 30 acres.

These figures show the importance of having large, undeveloped tracts of land for siting of solid waste landfills. The study area offers an opportunity for prudent land use planning by allowing ample space for essential solid waste disposal services to be provided in an efficient manner. Zoning the undeveloped tracts adjacent to the current disposal facilities for commercial or light industrial use will reduce off-site impacts to residential neighborhoods and help to avoid future land-use conflicts.

Table1: Analysis of Potential Landfill Acreage Efficiency

| - EQUILATERAL TRIANGLE CONFIGURATION - | | |
|---|---------------------------------|----------------------------------|
| USABLE CELL AREA | TOTAL REQ'D. ACREAGE | EFFICIENCY PERCENTAGE |
| 1 ACRE | 10.14 ACRES | 9.86% |
| 2 ACRES | 12.95 ACRES | 15.44% |
| 3 ACRES | 15.34 ACRES | 19.56% |
| 4 ACRES | 17.51 ACRES | 22.85% |
| 5 ACRES | 19.54 ACRES | 25.59% |
| 6 ACRES | 21.47 ACRES | 27.94% |
| 7 ACRES | 23.33 ACRES | 30.00% |
| 8 ACRES | 25.13 ACRES | 31.84% |
| 9 ACRES | 26.88 ACRES | 33.48% |
| 10 ACRES | 28.59 ACRES | 34.98% |
| 11 ACRES | 30.26 ACRES | 36.35% |
| 12 ACRES | 31.91 ACRES | 37.61% |
| 13 ACRES | 33.52 ACRES | 38.78% |
| 14 ACRES | 35.12 ACRES | 39.87% |
| 15 ACRES | 36.69 ACRES | 40.88% |
| 16 ACRES | 38.25 ACRES | 41.83% |
| 17 ACRES | 39.78 ACRES | 42.73% |
| 18 ACRES | 41.31 ACRES | 43.58% |
| 19 ACRES | 42.81 ACRES | 44.38% |
| 20 ACRES | 44.31 ACRES | 45.14% |
| 21 ACRES | 45.79 ACRES | 45.86% |
| 22 ACRES | 47.26 ACRES | 46.55% |
| 23 ACRES | 48.72 ACRES | 47.21% |
| 24 ACRES | 50.17 ACRES | 47.83% |
| 25 ACRES | 51.62 ACRES | 48.44% |
| 26 ACRES | 53.05 ACRES | 49.01% |
| 27 ACRES | 54.47 ACRES | 49.57% |
| 28 ACRES | 55.89 ACRES | 50.10% |
| 29 ACRES | 57.30 ACRES | 50.61% |
| 30 ACRES | 58.70 ACRES | 51.11% |
| 31 ACRES | 60.10 ACRES | 51.58% |
| 32 ACRES | 61.48 ACRES | 52.05% |
| 33 ACRES | 62.87 ACRES | 52.49% |
| 34 ACRES | 64.25 ACRES | 52.92% |
| 35 ACRES | 65.62 ACRES | 53.34% |
| 36 ACRES | 66.98 ACRES | 53.74% |
| 37 ACRES | 68.35 ACRES | 54.14% |
| 38 ACRES | 69.70 ACRES | 54.52% |
| 39 ACRES | 71.05 ACRES | 54.89% |
| 40 ACRES | 72.40 ACRES | 55.25% |
| 41 ACRES | 73.75 ACRES | 55.60% |
| 42 ACRES | 75.08 ACRES | 55.94% |
| 43 ACRES | 76.42 ACRES | 56.27% |
| 44 ACRES | 77.75 ACRES | 56.59% |
| 45 ACRES | 79.08 ACRES | 56.91% |
| 46 ACRES | 80.40 ACRES | 57.21% |
| 47 ACRES | 81.72 ACRES | 57.51% |
| 48 ACRES | 83.04 ACRES | 57.80% |
| 49 ACRES | 84.35 ACRES | 58.09% |
| 50 ACRES | 85.66 ACRES | 58.37% |

Table 2: Analysis of Potential Landfill Acreage Efficiency

| - SQUARE CONFIGURATION - | | |
|--------------------------|-------------------------|--------------------------|
| USABLE CELL AREA | TOTAL REQ'D. ACREAGE | EFFICIENCY PERCENTAGE |
| 1 ACRE | 8.51 ACRES | 11.76% |
| 2 ACRES | 11.09 ACRES | 18.03% |
| 3 ACRES | 13.31 ACRES | 22.54% |
| 4 ACRES | 15.34 ACRES | 26.08% |
| 5 ACRES | 17.24 ACRES | 29.00% |
| 6 ACRES | 19.06 ACRES | 31.48% |
| 7 ACRES | 20.81 ACRES | 33.63% |
| 8 ACRES | 22.51 ACRES | 35.53% |
| 9 ACRES | 24.17 ACRES | 37.23% |
| 10 ACRES | 25.79 ACRES | 38.77% |
| 11 ACRES | 27.39 ACRES | 40.17% |
| 12 ACRES | 28.95 ACRES | 41.45% |
| 13 ACRES | 30.49 ACRES | 42.63% |
| 14 ACRES | 32.02 ACRES | 43.73% |
| 15 ACRES | 33.52 ACRES | 44.75% |
| 16 ACRES | 35.01 ACRES | 45.71% |
| 17 ACRES | 36.48 ACRES | 46.60% |
| 18 ACRES | 37.94 ACRES | 47.45% |
| 19 ACRES | 39.38 ACRES | 48.25% |
| 20 ACRES | 40.82 ACRES | 49.00% |
| 21 ACRES | 42.24 ACRES | 49.72% |
| 22 ACRES | 43.65 ACRES | 50.40% |
| 23 ACRES | 45.06 ACRES | 51.05% |
| 24 ACRES | 46.45 ACRES | 51.67% |
| 25 ACRES | 47.84 ACRES | 52.26% |
| 26 ACRES | 49.22 ACRES | 52.83% |
| 27 ACRES | 50.59 ACRES | 53.37% |
| 28 ACRES | 51.96 ACRES | 53.89% |
| 29 ACRES | 53.31 ACRES | 54.39% |
| 30 ACRES | 54.67 ACRES | 54.88% |
| 31 ACRES | 56.01 ACRES | 55.34% |
| 32 ACRES | 57.36 ACRES | 55.79% |
| 33 ACRES | 58.69 ACRES | 56.23% |
| 34 ACRES | 60.02 ACRES | 56.64% |
| 35 ACRES | 61.35 ACRES | 57.05% |
| 36 ACRES | 62.67 ACRES | 57.44% |
| 37 ACRES | 63.99 ACRES | 57.82% |
| 38 ACRES | 65.30 ACRES | 58.19% |
| 39 ACRES | 66.61 ACRES | 58.55% |
| 40 ACRES | 67.92 ACRES | 58.90% |
| 41 ACRES | 69.22 ACRES | 59.23% |
| 42 ACRES | 70.51 ACRES | 59.56% |
| 43 ACRES | 71.81 ACRES | 59.88% |
| 44 ACRES | 73.10 ACRES | 60.19% |
| 45 ACRES | 74.39 ACRES | 60.50% |
| 46 ACRES | 75.67 ACRES | 60.79% |
| 47 ACRES | 76.95 ACRES | 61.08% |
| 48 ACRES | 78.23 ACRES | 61.36% |
| 49 ACRES | 79.50 ACRES | 61.63% |
| 50 ACRES | 80.78 ACRES | 61.90% |

Table 3: Analysis of Potential Landfill Acreage Efficiency

| - CIRCULAR CONFIGURATION - | | |
|----------------------------|-------------------------|--------------------------|
| USABLE CELL AREA | TOTAL REQ'D. ACREAGE | EFFICIENCY PERCENTAGE |
| 1 ACRE | 7.28 ACRES | 13.73% |
| 2 ACRES | 9.69 ACRES | 20.64% |
| 3 ACRES | 11.77 ACRES | 25.49% |
| 4 ACRES | 13.68 ACRES | 29.24% |
| 5 ACRES | 15.48 ACRES | 32.30% |
| 6 ACRES | 17.21 ACRES | 34.87% |
| 7 ACRES | 18.87 ACRES | 37.09% |
| 8 ACRES | 20.49 ACRES | 39.04% |
| 9 ACRES | 22.08 ACRES | 40.77% |
| 10 ACRES | 23.63 ACRES | 42.32% |
| 11 ACRES | 25.15 ACRES | 43.74% |
| 12 ACRES | 26.65 ACRES | 45.02% |
| 13 ACRES | 28.13 ACRES | 46.21% |
| 14 ACRES | 29.60 ACRES | 47.31% |
| 15 ACRES | 31.04 ACRES | 48.32% |
| 16 ACRES | 32.47 ACRES | 49.27% |
| 17 ACRES | 33.89 ACRES | 50.16% |
| 18 ACRES | 35.30 ACRES | 51.00% |
| 19 ACRES | 36.69 ACRES | 51.78% |
| 20 ACRES | 38.08 ACRES | 52.53% |
| 21 ACRES | 39.45 ACRES | 53.23% |
| 22 ACRES | 40.82 ACRES | 53.90% |
| 23 ACRES | 42.18 ACRES | 54.53% |
| 24 ACRES | 43.53 ACRES | 55.14% |
| 25 ACRES | 44.87 ACRES | 55.72% |
| 26 ACRES | 46.21 ACRES | 56.27% |
| 27 ACRES | 47.54 ACRES | 56.80% |
| 28 ACRES | 48.86 ACRES | 57.31% |
| 29 ACRES | 50.18 ACRES | 57.79% |
| 30 ACRES | 51.49 ACRES | 58.26% |
| 31 ACRES | 52.80 ACRES | 58.71% |
| 32 ACRES | 54.10 ACRES | 59.15% |
| 33 ACRES | 55.40 ACRES | 59.57% |
| 34 ACRES | 56.69 ACRES | 59.97% |
| 35 ACRES | 57.98 ACRES | 60.36% |
| 36 ACRES | 59.27 ACRES | 60.74% |
| 37 ACRES | 60.55 ACRES | 61.11% |
| 38 ACRES | 61.83 ACRES | 61.46% |
| 39 ACRES | 63.10 ACRES | 61.81% |
| 40 ACRES | 64.37 ACRES | 62.14% |
| 41 ACRES | 65.64 ACRES | 62.47% |
| 42 ACRES | 66.90 ACRES | 62.78% |
| 43 ACRES | 68.16 ACRES | 63.09% |
| 44 ACRES | 69.42 ACRES | 63.38% |
| 45 ACRES | 70.67 ACRES | 63.67% |
| 46 ACRES | 71.92 ACRES | 63.96% |
| 47 ACRES | 73.17 ACRES | 64.23% |
| 48 ACRES | 74.42 ACRES | 64.50% |
| 49 ACRES | 75.66 ACRES | 64.76% |
| 50 ACRES | 76.91 ACRES | 65.02% |

Table 4. Survey of Landfill Regulations
(Information compiled by the Jefferson Parish Planning Department)

| Community | Minimum Development of Site | Setbacks | Landscaping/Buffering | Reducing Off-Site Impacts | Miscellaneous |
|----------------|-----------------------------|---|--|---|--|
| Charlotte, NC | 150 acres | <ul style="list-style-type: none"> Office uses must be min. of 100' from property line All other activities must be a min. of 100' from property line and 500' from a residence | <ul style="list-style-type: none"> Landscaping must be provided b/t property line and street Additional landscaping may be required if existing vegetation is not sufficient | May not be operated on Sundays, earlier than 7:00 a.m. or later than 6:00 p.m. on any other day | <ul style="list-style-type: none"> Vehicular access must be paved and not provided by residential street Entrance must be gated and closed when not in operation |
| Denver, CO | NA | Must be min. of 500' from residential district | NA | NA | Required conditional use approval in I-1 and I-2 Industrial Districts |
| Fort Worth, TX | NA | NA | NA | NA | Submit site development plan showing: <ul style="list-style-type: none"> Surrounding zoning and land use Proximity to residences and other uses Traffic impact Location of buildings Fire prevention Groundwater protection Screening fences and landscaping Signage Submit operations plan addressing: <ul style="list-style-type: none"> Prevention of unauthorized waste Control of water runoff, erosion, dust, odors, and rodents |

| Community | Minimum Development Site | Setbacks | Landscaping/Buffering | Reducing Off-Site Impacts | Miscellaneous |
|-------------------------|--------------------------|--|--|---|---|
| Memphis, TN | 100 acres | <ul style="list-style-type: none"> Must be min. of 500' from residence No filling within 100' of site boundary or street right-of-way No structure shall be located in required yard or closer than 100' from property line | <ul style="list-style-type: none"> Landscape screen with fence shall be installed along perimeter | <ul style="list-style-type: none"> Must have proper drainage Installation of roads, parking, buildings, etc. shall be located so as not to adversely affect adjoining properties Shall not create a nuisance or cause undue noise, vibration, dust, odor, or candescence to adjacent properties Days and hours of operation are subject to approval of legislative body | <ul style="list-style-type: none"> Fire prevention Litter control Fuel and chemical spills Gate shall remain locked Shall have direct access to a major street |
| Hillsborough County, FL | NA | <ul style="list-style-type: none"> Front, rear, and side yards min. of 200' No filling within 1,000' of a dwelling, potable water well, school, house of worship, or hospital | <ul style="list-style-type: none"> Shall be fenced with 6' fence with locking gate at all access points Buffering and screening required | <ul style="list-style-type: none"> Gates must be locked when no activity on site | <ul style="list-style-type: none"> No access through residential street Requires special use permit |
| Broward County, FL | 20 acres | <ul style="list-style-type: none"> No disposal area shall be within 200' of any plot line Shall not be located within 1,000' of any residential district except agricultural districts | <ul style="list-style-type: none"> Disposal area enclosed by a fence with a gate | <ul style="list-style-type: none"> No burning of any kind No refuse deposited in any required yard Refuse must be compacted and topped by a soil cover daily | <ul style="list-style-type: none"> Max. height of landfill area shall An attendant must be on duty when |

| Community | Minimum Development at Site | Setbacks | Landscaping/Buffering | Reducing Off-Site Impacts | Miscellaneous |
|---------------------|-----------------------------|---|--|--|---|
| Cobb County, GA | NA | <ul style="list-style-type: none"> No disposal within 2,000 yards of a public highway, a residence, or any gathering place | <ul style="list-style-type: none"> Must be enclosed by 6' fence | <ul style="list-style-type: none"> Must pack and cover daily all materials with at least 6" of earth Burning is prohibited | <ul style="list-style-type: none"> Required special use permit Only allowed in heavy industrial Only allowed in areas incapable of No access through residential street Must have operator in attendance |
| Douglas County, WA | 40 acres | <ul style="list-style-type: none"> Shall be at least 1 mile from any residence | <ul style="list-style-type: none"> Requires adequate landscaping to screen project from public view Perimeter security and/or site obscuring fence may be required | <ul style="list-style-type: none"> Dust abatement plan must be submitted Lighting sources shall not be visible from off-site residences and public roads Review authority may specify hours and duration of operation | NA |
| Davidson County, TN | 100 acres | <ul style="list-style-type: none"> Min. setback of 100' from any property line Min. setback of 250' from any residential zoning district Min. setback of 500' from any residential structure | <ul style="list-style-type: none"> Shall be a landscaped buffer yard along all residential zoning districts and districts permitting residential use | NA | <ul style="list-style-type: none"> Driveway access shall be from a any residential zoning district from the intersection with an arterial |
| Clark county, NV | NA | <ul style="list-style-type: none"> Must be setback 1,000' from any non-industrial use Must be setback 200' from any other industrial use except accessory uses | NA | NA | <ul style="list-style-type: none"> Requires special use permit in M |

SECTION II. BE IT FURTHER ORDAINED, that the Planning Director for the Parish of Jefferson be, and is hereby directed, authorized and empowered to make the necessary and appropriate changes and amendments to Ordinance No. 3813, as amended, of the Parish of Jefferson, more particularly Sheet 5 of the Official Zoning Map thereof, designating the above mentioned and described property as:

Areas 1, 2, 4, and 5 from U-1 unrestricted to M-1 industrial;
Area 6 from OW-1 office warehouse to M-1 industrial;
Areas 7 and 8 from S-1 suburban to C-1 neighborhood commercial;
Areas 11, 12, 13, 14, and 15 from S-1 suburban to M-1 industrial;
Areas 9 and 10 from S-1 suburban to OW-1 office warehouse; and
Area 3 from S-1 suburban and U-1 unrestricted to M-4 industrial.

SECTION III. BE IT FUTHER ORDAINED, that the Council Chairman, or in his absence, the Vice Chairman, is hereby empowered, authorized and directed to sign and execute all acts or documents necessary and proper in the premises to give full force and effect to this ordinance.

The foregoing Ordinance having been submitted to a vote, the thereon was as follows:

YEAS: _____ NAYS: _____ ABSENT: _____

This ordinance was declared adopted on the _____ day of _____, 2003, and shall become effective as follows, if signed forthwith by the Parish President, ten (10) days after adoption, thereafter, upon signature by the Parish President or, if not signed by the Parish President, upon expiration of the time of the ordinances to be considered finally adopted without the signature of the Parish President, as provided in Section 2.07 of the Charter. If vetoed by the Parish President and subsequently approved by the Council, this ordinance shall become effective on the day of such approval.

EXHIBIT 4.2**ARTICLE XXXIII
INDUSTRIAL DISTRICT M-4****Sec. 40-611. Description.**

This district is intended solely for industrial activities relating to or involving waste collection, handling and disposal facilities. The purpose of this district is to allow the normal operation of state permitted landfills and other waste handling, recycling and disposal establishments under such conditions as will protect adjacent land uses. Whenever practical, this district should be buffered from nearby residential areas by more restrictive zoning.

Sec. 40-612. Permitted uses.

In M-4 districts, only the following uses of property shall be permitted:

- (1) Any existing use shall be considered a conforming use and may continue to operate, provided it does not discontinue such use for a period of more than one (1) year.
- (2) Unless otherwise provided for in this section, the following uses, as defined and listed in the 2002 *North American Industrial Classification System*, shall be permitted:
 - a. Solid Waste Collection (NAICS Code 562111). This industry comprises establishments primarily engaged in one or more of the following:
 - i. Collecting and/or hauling nonhazardous solid waste (i.e. garbage) within a local area;
 - ii. Operating nonhazardous solid waste transfer stations; and
 - iii. Collecting and/or hauling mixed recyclable materials within a local area.
 - b. Other Waste Collection (NAICS Code 562119). This industrial classification comprises establishments primarily engaged in collecting and/or hauling waste (except nonhazardous solid waste and hazardous waste) within a local area. Establishments engaged in brush or rubble removal services are included in this industry.
 - c. Solid Waste Landfill (NAICS Code 562212). This industrial classification comprises establishments engaged in operating landfills for the disposal of nonhazardous solid waste or the combined activity of collecting and/or hauling nonhazardous solid waste materials within a local area and operating landfills for the disposal of nonhazardous solid waste. Landscaping and perimeter buffering for solid waste landfills shall be as follows:
 - i. The facility must comply with the perimeter buffer and security requirements mandated by federal and/or state law.

- ii. Within the reserved perimeter buffer area, existing vegetation shall not be disturbed or removed except for paved access areas, landscaping and security fencing. Security fencing shall be to the rear of the landscape buffer.
 - iii. The perimeter buffer shall be a minimum of two hundred (200) feet when located adjacent to public streets or roadways or when the property boundary abuts a zoning district other than M-4. If the property boundary abuts a residential zoning district, the perimeter buffer shall be a minimum of five hundred (500) feet.
 - iv. Variances to the perimeter buffer may be waived or modified by the Jefferson Parish Council pursuant to Article XXXIX Exceptions and Modifications.
- d. Other Nonhazardous Waste Treatment and Disposal (NAICS Code 562219). This industrial classification comprises establishments primarily engaged in operating nonhazardous waste treatment and disposal facilities (except landfills, combustors, incinerators and sewer systems or sewage treatment facilities) or the combined activity of collecting and/or hauling of nonhazardous waste materials within a local area and operating waste treatment or disposal facilities (except landfills, combustors, incinerators and sewer systems, or sewage treatment facilities). Compost facilities are included in this industry.
- i. Compost facilities shall be subject to the landscaping and perimeter buffering requirements of subsection (2)c. above.
- e. Material recovery facilities (NAICS Code 562920). This industrial classification comprises establishments primarily engaged in operating facilities for separating and sorting recyclable materials from nonhazardous waste streams (i.e., garbage) and/or operating facilities where commingled recyclable materials, such as paper, plastics, used beverage cans, and metals, are sorted into distinct categories.
- f. Other facilities or activities involving the treatment, storage, disposal or handling of nonhazardous wastes regulated by the United State Environmental Protection Agency, the Louisiana Department of Environmental Quality and the Louisiana Department of Natural Resources.
- (3) Approval from the Jefferson Parish Council, as provided for by Article XLI Special Permitted Use, shall not be required for those industries listed in subsection (2) above.
- a. Notice shall be given to the Jefferson Parish Department of Environmental Affairs whenever new development or changes to existing development are proposed, when the federal or state approval process for the proposed development mandates a public review.
 - b. Landfills and composting facilities shall not be allowed in any area of Jefferson Parish except the M-4 district.

- (4) All areas of operation shall be screened by trees and shrubs, fences, walls or earth berms or a combination of the same.
 - a. In no event shall such screening be less than 7 feet in height.
 - b. Natural vegetation shall be used to the maximum extent possible.
 - c. A minimum of 20 foot must be vegetated with plants at least 7 foot in height.
- (5) *Hazardous, nuclear or radioactive waste treatment and disposal facilities* shall not be permitted.
- (6) Development within the M-4 Industrial District shall meet all federal, state and local fire, safety and building codes, and all other applicable codes.
- (7) In the event any of the above criteria, standards, or regulations related to required buffer zones are in conflict with each other or with local, state, or federal regulations, the more restrictive shall govern.

Sec. 40-613. Height regulations

- (1) The maximum height for any building or structure by right shall be sixty-five (65) feet.
- (2) Landfill vertical expansion shall be pursuant to federal or state law. A maximum increase in the required buffer zone of one (1) foot for each additional fifteen (15) feet that landfill vertical expansion exceeds sixty-five (65) feet shall be provided.
- (3) No structures exceeding sixty-five (65) feet in height may be located closer than one hundred (100) feet from a residential district.

Sec. 40-614. Area regulations.

- (1) Any site used for a solid waste landfill (NAICS Code 562212) must have a minimum size of thirty (30) acres.

Sec. 40-615. Off-street parking.

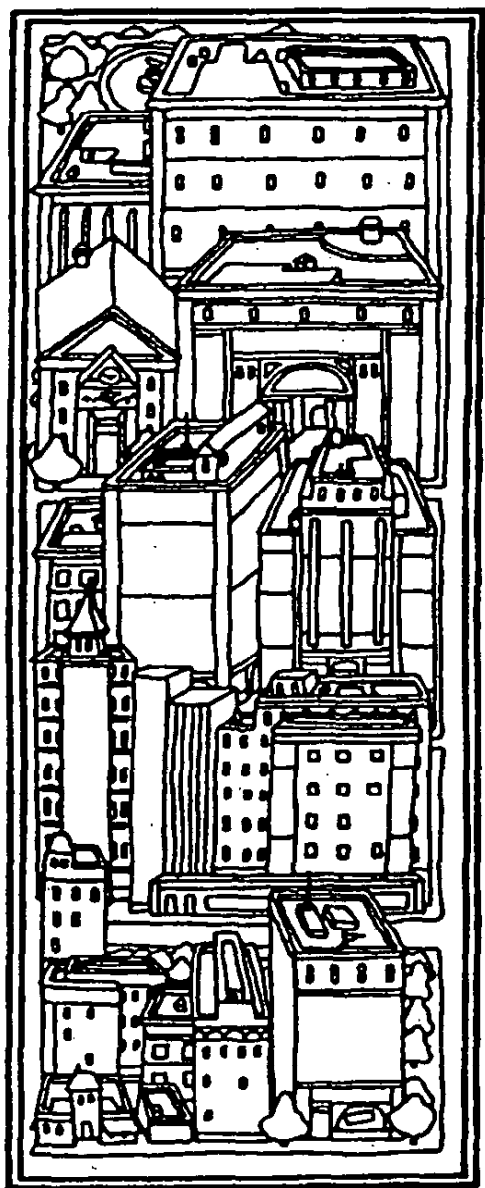
Shall be provided as set forth in Article XXXV.

Sec. 40-616 – Loading zone requirements.

Shall be provided as set forth in Article XXXV.

Sec. 40-617-40-620. Reserved

REAL ESTATE MARKET DATA CENTER



University of New Orleans
College of Business Administration

Forecast of Solid Waste for
Type I Landfills in
Jefferson Parish, LA
2002 to 2050

July 16, 2002



UNIVERSITY OF
NEW ORLEANS

REAL ESTATE MARKET DATA CENTER

Forecast of Solid Waste Demand for
Type I Landfills in Jefferson Parish, LA
2002 to 2050

Prepared for

Jefferson Parish Planning and Zoning
And
Coastal Engineering & Environmental Consultants

By

Real Estate Market Data Center
Wade R. Ragas, Director
University of New Orleans

For
Jefferson Parish Planning and Zoning

July 16, 2002

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Purpose

Regional municipal solid waste disposal is a land intensive operation, which must meet a wide array of Federal, State and Local operational requirements. Currently, two solid waste landfills serving much of the Southshore of Lake Pontchartrain urban area are operating on the Western edge of Jefferson Parish near Waggaman. The appropriate zoning of these parcels and their surrounding lands is the subject of a planning study by the Jefferson Parish Department of Planning and Zoning. This study estimates the long-term demand for Type I solid waste disposal acreage from 2002 to 2025 with a further estimate under current technological conditions to 2050. In addition recommendations for compatible adjacent land uses are identified and their typical configuration requirements to be acceptable in the marketplace are discussed.

Preliminary Findings

1. The 2000 population of the Southshore of Lake Pontchartrain parishes of Orleans, Jefferson, St Bernard, St. Charles, St. John, Lafourche and Terrebonne was 1,329,000 persons.
2. The U. S. Census expectation for the population of the same parishes in 2025 is 1,490,000 persons, which is a 12.88% increase in 25 years or a 0.50% growth rate. The American economy has had a real income growth rate of 1.5% to 3% over the past decade and is likely to support a 2% rate of real growth over the next decade. A combined growth rate in municipal tonnage of 2.5% per year for the New Orleans area would be consistent with population expectations and growth in consumer expenditures.
3. The typical Type I waste produced by American households is 4.3 pounds per day as of 1997 of which 0.5 pounds or more was in recyclable materials.
4. The Jefferson Parish Landfill is operated to serve primarily Jefferson Parish but does accept limited waste from other sources. The 2001 waste tonnage accepted at Jefferson Parish was 541,189 tons or 6.51 pounds per Jefferson resident per day. The non-recyclable waste production generated in Jefferson Parish is somewhat more than the national average.
5. Since 1996 the waste tonnage has averaged 486,100 tons per year. An underlying growth rate of between 2% and 3% per year in tonnage received without increasing the market area served is present. The Jefferson Parish Sanitary Landfill current phase has a remaining life of about 7 to 9 years at current rates of waste tonnage.
6. The River Birch Landfill serves primarily Orleans, St. Charles, St. John, Terrebonne, St. Bernard and Lafourche parishes with some materials originating in any of 6 other parishes in Southeast Louisiana. The 2001 tonnage accepted at River Birch of 877,076 is 5.62 pounds per person per day. Again, only somewhat higher than the national average rate and drawn from a less affluent population than Jefferson Parish.
7. Overall waste tonnage from all South Louisiana landfills grew from 2.296 to 2.356 million tons from 2000 to 2001 or a 2.6% rate of growth. The combination of long-term population growth rate (0.5%) and the approximate growth of real income by households of 2.0% per year are consistent with actual observed rate of growth in tonnage from all landfills in the region from 2000 to 2001. A 2.5% per year growth is used in this analysis to predict the long-term solid waste Type I landfill demand.
8. Only one new Type I landfill site with multiple phase potential is expected to be permitted over the next 25 years near the study area. The Belle Landfill in Assumption parish would replace the landfill capacity of the Woodside facility in Livingston with only one year of current capacity left. It could also replace the Colonial Landfill in Ascension parish in under 7 years when its capacity is fully utilized. There is a possibility of a new future permit for Woodside, but there is no application pending at this time. It is also possible that Colonial will acquire a new permit.
9. Permitting of new solid waste landfill sites, except for expansion of existing facilities within the Hurricane Protection levee system of the New Orleans metro area, is viewed as unlikely in this study based on discussions with the Louisiana Department of Environmental Quality (DEQ) and landfill operators.

10. The Type I solid waste landfills in Jefferson Parish in serving their existing market area between 2002 and 2025 will absorb all of their existing capacity and require at least 53 new acres at Jefferson Parish Sanitary Landfill and 69 acres at River Birch Landfill. These new cell areas exclude adjacent control levees, roadways and buffer lands. Allowing for the current multiple cell design and 200-foot buffer zones the current landfills will require at least 65 new gross acres for Jefferson Parish Sanitary Landfill and 85 new acres for River Birch by 2025 (See Table Three).
11. Assuming the 2025 level of demand was constant for the next 25 years yields the most conservative minimum acreage required to 2050. These minimum levels exceed the acreage in the study area. Jefferson Parish Sanitary Landfill would require 142 more new acres and River Birch 216 new acres between 2025 and 2050 (See Table Three).
12. The land area to be zoned for specific waste disposal uses should include all existing acreages permitted as Type I or Type III landfills in the study area.
13. Land area near the existing permitted Type I or Type III facilities totaling at least 509 additional acres of landfill is likely to be necessary by 2050 (See Table Four).
14. Buffer zones of 200 feet around the entire perimeter are generally required by existing DEQ permits, however variances to only 100 feet have been secured with adjacent land owner permission for the Southern edge of the River Birch site and a portion of the Jefferson Parish Sanitary Landfill site. Buffer areas could reasonably consider the railroad right of way as being part of the necessary buffer area in those areas adjoining existing tracks. Presently, there is no rail delivery of waste to these sites. Subsequent introduction of rail delivery to these sites could necessitate an expansion of the buffer zone from the railway right of way in the direction of other landowners.
15. The primary truck traffic to serve the waste sites flows along U.S. Highway 90. Industrial land uses to serve this truck traffic and other industrial uses are also appropriate along the northern edge of the study area. New facilities for truck oriented freight operators may migrate to this area from Eastern New Orleans as U.S. 90 is upgraded to near interstate standards as part of the new I-49. The rate of industrial land absorption in the future could reasonably be expected to be more rapid than in the past. A pace of up to five acres per year could be supported by land near the study area. An allowance for at least 100 acres of industrially zoned land for the next 25 years and as much as 200 cumulative acres to serve the next 50 years would be reasonable at current demand levels. There is also the possibility of users of recycled plastics and paper choosing to locate near these landfills to increase manufacturing efficiency in the future.
16. The minimum industrial land depth should be 500 feet.
17. The eastern and southeastern edges of the study area are appropriate for commercial uses. Much of this area is already zoned commercial. An absorption rate of 2 to 3 acres per year would be consistent with historic demand levels. New future demand from mini-storages, rentable workspaces and recreational/business vehicle storage are appropriate land uses in this area, which would require much faster rates of land absorption.
18. The minimum land depth for commercially zoned land should be 300 feet.

19. No permanent residential uses should be allowed in the study area although temporary lodging associated with truck stops or freight yards should be permitted near the study area.
20. The use of acreages within the study area for residential composting as part of a recycling program should be discouraged since this waste tonnage could be placed elsewhere with less regulatory restrictions than the difficult to permit Type I landfills. However there are closed landfills adjoining the subject study area and other nearby vacant lands which could be appropriate for composting.
21. Acceptance of municipal waste from St. Tammany, Tangipahoa, Livingston, East Baton Rouge and West Baton Rouge in large quantities over long contractual periods of time would substantially alter the modest acreage demand forecast presented herein. Given the limited acreage available within the study site Jefferson Parish should encourage St. Tammany to create appropriate Type I and III disposal facilities on the Northshore of Lake Pontchartrain or within Southern Mississippi to serve their needs.

Study Area

A 1,905-acre site, bounded by the GNOL Landfill on the west by Highway 90 on the south and Live Oak Road, was identified as the study area by Jefferson Parish Planning. The study parcel has existing C-1 and C-2 zoning covering approximately 60 acres on the southeast edge of the study area at the intersection of Live Oak and US 90.

Within the study area are two Type I existing landfills, River Birch (324 acres) and Jefferson Parish (628 acres). Also within the subject study area is a proposed construction and demolition (C&D) landfill of 99 acres to be operated by River Birch. Across from the Parish landfill site is an 87-acre soil borrow area.

An inactive sludge disposal site occupies a portion of a of 78.5 acres, which is within a 174-acre site owned by Marsh Investments on the western edge of the study area adjoining the River Birch Type I facility. River Birch owns a vacant 442-acre parcel, which forms the southeast portion of the study area. River Birch also owns a vacant parcel of the 99-acres proposed to be used as a C&D Type III landfill.

Two other small parcels are within the study area: Delta Security owns a 98-acre parcel, which is zoned U-1 adjoins Highway 90 in a triangular shape and the American Red Cross owned an 8 acre parcel adjoining the Missouri Pacific and Southern Railway right of ways.

The study area does not conform on the north or west to the most natural existing boundaries. The Missouri Pacific and Southern Railway right of ways form a continuous barrier between residential land uses on the north and the industrial or commercial land uses near the study area.

South of the railway and north of the study area is approximately 527 acres of vacant land, which is either industrial M-1 or commercial zoning (OW-1 or C-1) bounded by on the southwest by Live Oak Blvd.

There is also a 210-acre vacant parcel south of Live Oak and north of the rail right of way, which also has land uses of an industrial rather than residential character.

West of the study area boundary is the 379-acre closed Greater New Orleans Landfill and a small triangular parcel fronting US 90 owned by Marsh Investments. The closed landfill is a similar land use to much of the study site area. South of US 90 and the Delta Security Parcel is a 194-acre closed landfill which does not meet current Federal standards to be operated as a Type I Municipal Waste Landfill. The large tract of wetlands south of the study area is owned by Churchill Farms. The frontage of this large four thousand acre tract along US 90 across from the study area may need to be examined for appropriate zoning at a future date.

The study area has become the regional landfill site for most parishes south of Lake Pontchartrain, as well as, Terrebonne-Lafourche. The study area is within the

Federal Hurricane Protection Levee Systems, which makes it safer from storm surge damage than any other potential site in Jefferson, St. Charles, Terrebonne or Lafourche. The only new landfill sites outside of the Coastal Zone to be successfully permitted are in Ascension and Assumption Parishes. Sites North of I-12 in St. Tammany, Tangipahoa and Livingston also could be successfully permitted, but there are no pending applications.

The transit distances to these outlying sites would enormously increase the costs of Type I and III waste disposal in the New Orleans area. The study area is the long-term regional site for solid waste disposal for the New Orleans metropolitan area south of Lake Pontchartrain.

Type I and III Solid Waste Landfills

Currently in the New Orleans area there are two approved Type I (Municipal) solid waste landfills. Type I landfills accept municipal waste and construction materials. These sites must meet stringent Federal and state rules on the design of the containment structure (liners, drainage, subsoil), sanitary operation (birds, rodent and pestilence controls), odor, safety and fire retardant (constant soil coverage and treatment), visibility (mandatory buffer areas, height limitations) and site closure requirements. In addition the sites south of Lake Pontchartrain are in the Coastal Management Zone of the state. Approvals for development of wetlands must be secured from the Army Corp of Engineers, State DEQ, State DNR, Federal EPA and municipal government.

The breadth and complexity of this permitting process limits the number of operating facilities and the rate of facility creation. Typically the permitting process including any litigation from other parties requires three to five years. Construction of a lined Type I facility will require an additional 18 months to 3 years, depending on the units' initial size and soil conditions.

It's not unusual for the permit process to begin 5 to 7 years before the opening of a new Type I facility.

Outside of the New Orleans area there are two operating Type I facilities—Colonial and Woodside. The Louisiana Department of Environmental Quality has supplied a history of tonnage received at all sites in Southeast Louisiana. Also annual calculations of remaining tonnage capacity are calculated by the landfill operator and reported to the Louisiana DEQ as of June 30 of each year.

Table One identifies the annual tonnages by operator and the remaining useful life. Map One identifies the approximate location of each landfill. There is almost no unused capacity at Woodside in Livingston Parish. There is currently no permit request being processed for a Woodside expansion. It will begin closure during 2003.

The Colonial site had 98 months of remaining capacity as of June 2001 without having to accept waste diverted from Woodside due to its closure. As of July 2002 Colonial would be below 7 years of remaining capacity and possibly below 5 years due to future waste diversion from Woodside in 2003 and 2004.

One new municipal waste site is nearing completion of the permit process in Ascension Parish – Belle Landfill. It will include 250 acres in the first phase and has acreage for 250 more acres of landfill. The Belle site still needs a wetland permit from the Corp of Engineers, but it is outside of the Coastal Zone.

Table One
Gross Waste Tonnage
Southeast Louisiana Type I and III Landfills

| | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | June 2001 Remaining Life |
|-----------------------|------------------|------------------|------------------|------------------|------------------|------------------|--------------------------------|
| Colonial (I) | 227,139 | 248,602 | 168,675 | 188,036 | 231,544 | 284,023 | 8 YRS |
| Jefferson Parish (I) | 450,718 | 527,404 | 293,923 | 487,456 | 614,890 | 541,189 | 10 YRS |
| Woodside (I) | 520,652 | 479,661 | 562,142 | 572,881 | 754,098 | 555,576 | 1 YR |
| Johnny Smith (III) | 27,840 | 55,000 | 61,795 | 71,450 | 94,036 | 98,406 | N.A. |
| Industrial Pipe (III) | N.A. | 17,266 | 25,217 | 22,262 | 29,017 | 34,067 | N.A. |
| River Birch (I) | N.A. | N.A. | N.A. | N.A. | 571,995 | 877,076 | 16.9 |
| Annual | 1,226,349 | 1,326,933 | 1,111,761 | 1,342,085 | 2,296,580 | 2,356,270 | |

Source: Louisiana Department of Environmental Quality

Only sites outside the Coastal Zone or within the Federal Hurricane Levee Systems are likely to be approved by the Louisiana Department of Environmental Quality for the foreseeable future in Southeast Louisiana. Belle Landfill will probably consume the demand for tonnage at Woodside over the next 5 years. The Colonial site is located in a wetland where it will be difficult to expand, but it could receive expansion permission. However Belle is unlikely to be accepting tonnage until 2004 at the very earliest. Belle is also located in a wetland, which will require an extensive permitting process.

Between January 2003 and mid-2004 (or longer) some or all of the 550,000 tons per year accepted by Woodside will be diverted to Colonial, Jefferson Parish and River Birch.

Type III solid non-wet industrial waste and construction materials can be disposed of at Johnny Smith in Slidell, Industrial Pipe in Belle Chasse, River Birch's new landfill in Waggaman, the AMID Landfill in Eastern New Orleans and the new Killona Landfill in St. Charles. There is no separate Type III for Jefferson businesses at this time.

Type III landfills are relatively simple to permit and construct compared to Type I Municipal Waste. This study has only allowed for a continuation of the River Birch Type III landfill at its current site over the next 20 years and a subsequent new site of an equal size adjacent to current one from 2025 to 2050. It would be prudent for Jefferson Parish to also operate a separate Type III site to conserve the capacity of their Type I permitted area for municipal waste. It should be near the present Type I site, but does not have to be contiguous.

Predicting the need for Type III sites is not well related to general economic growth or population growth. Hurricanes, major road projects, large-scale demolitions (such as HANO has underway or the Belle Promenade Mall demolition) and obsolescence/redevelopment of facilities create much of the demand and fluctuation in demand for the Type III facilities. Assumed herein is the ability of Killona, Industrial Pipe, Johnny Smith, AMID and River Birch to provide the appropriate geographic diversity for the long run in Type III facilities. However their operation would not preclude the creation of a Type III facility to serve Jefferson Parish.

Events of nature could suddenly make the demand for Type III facilities surge, but those are not forecastable events.

Population Forecast

The US Census final population counts for 2000 are summarized by parish on Table Two. The metro New Orleans area gained 53,000 persons since 1990. This is a modest 0.5% per year growth rate. A somewhat faster rate of increase occurred in Terrebonne and Lafourche parishes.

The Jefferson Parish and River Birch Landfills serve a market composed primarily of Jefferson, Orleans, Lafourche, St. Bernard, St. Charles, St. John the Baptist and Terrebonne Parishes. Plaquemines currently delivers municipal waste to landfills within the parish.. St. Tammany and Tangipahoa deliver waste to small landfills in each parish or to Woodside in Livingston or to sites in Hancock County, Mississippi.

The Southshore Lake Pontchartrain plus Terrebonne and Lafourche population totaled 1,329,000 persons as of 2000.

The US Census Bureau forecast of Southshore plus Terrebonne and Lafourche population is expected to grow by 0.5% per year for the next 25 years to 1,490,000. The census published forecast in 1997 has been adjusted on Table One to reflect the actual 2000 population counts. The market served by primarily River Birch and Jefferson Parish is expected to grow to 1.49 million persons by 2025. The gain of only 161,000 persons would make the southshore of the New Orleans area one of the slowest growth urban areas in the nation.

It is possible the Census Bureau is overly pessimistic in their view of population growth for the region. Relying upon their forecast is unlikely to overstate the demand for municipal waste disposal acreage in the New Orleans area.

Table Two
Forecast Population and Historic Trends
1970 to 2025

| | 1970 | State Share | 1980 | State Share | 1990 | State Share | 2000 | State Share | Forecast 2005 | State Share | Forecast 2015 | State Share | Forecast 2025 | State Share |
|--------------------|---------|-------------|---------|-------------|---------|-------------|---------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|
| New Orleans Metro | 1,124.3 | 30.9% | 1,285.0 | 30.4% | 1,263.0 | 30.0% | 1,316.4 | 29.5% | 1,346.5 | 29.4% | 1,420.0 | 29.05% | 1,547.4 | 28.25% |
| Jefferson | 337.5 | 9.3% | 456.0 | 10.8% | 448.0 | 10.6% | 455.4 | 10.2% | 467.2 | 10.2% | 501.0 | 10.25% | 534.0 | 10.30% |
| Orleans | 593.5 | 16.3% | 558.0 | 13.2% | 495.0 | 11.7% | 484.7 | 10.8% | 480.9 | 10.5% | 474.1 | 9.70% | 502.8 | 9.70% |
| Plaquemines | 25.2 | 0.7% | 26.0 | 0.6% | 26.0 | 0.6% | 26.7 | 0.6% | 28.9 | 0.6% | 31.8 | 0.65% | 33.7 | 0.65% |
| St. Bernard | 51.2 | 1.4% | 64.0 | 1.5% | 67.0 | 1.6% | 67.2 | 1.5% | 68.7 | 1.5% | 74.3 | 1.52% | 82.9 | 1.60% |
| St. Charles | 29.5 | 0.8% | 37.0 | 0.9% | 42.0 | 1.0% | 48.1 | 1.1% | 50.4 | 1.1% | 56.2 | 1.15% | 62.2 | 1.20% |
| St. John | 23.8 | 0.7% | 32.0 | 0.8% | 40.0 | 0.9% | 43.0 | 1.0% | 44.4 | 1.0% | 47.9 | 0.98% | 57.0 | 1.10% |
| Southshore | 1,060.7 | 29.1% | 1,173.0 | 27.8% | 1,118.0 | 26.5% | 1,125.1 | 25.2% | 1,140.4 | 24.9% | 1,185.4 | 24.25% | 1,272.7 | 24.55% |
| St. Tammany | 63.6 | 1.7% | 112.0 | 2.7% | 145.0 | 3.4% | 191.3 | 4.3% | 206.1 | 4.5% | 234.6 | 4.80% | 274.8 | 5.30% |
| Terrebonne | 76.1 | 2.1% | 94.5 | 2.2% | 97.0 | 2.3% | 104.5 | 2.3% | 107.6 | 2.4% | 112.4 | 2.30% | 114.0 | 2.20% |
| Lafourche | 68.9 | 1.9% | 68.9 | 1.6% | 85.9 | 2.0% | 90.0 | 2.0% | 96.2 | 2.1% | 104.1 | 2.13% | 103.7 | 2.00% |
| Houma-Thibodaux | 145.0 | 4.0% | 163.4 | 3.7% | 182.9 | 4.3% | 194.5 | 4.4% | 203.8 | 4.5% | 216.5 | 4.43% | 217.7 | 4.20% |
| Louisiana Revised | 3,639.3 | 100.0% | 4,222.0 | 100.0% | 4,217.0 | 100.0% | 4,469.0 | 100.0% | 4,580.1 | | 4,888.1 | | 5,184.0 | |
| Louisiana Original | 3,639.0 | | 4,222.0 | | 4,217.0 | | 4,425.0 | | 4,535.0 | | 4,840.0 | | 5,133.0 | |
| Census Growth Rate | | | | 16.0% | | -0.1% | | 4.9% | | 2.5% | | 6.7% | | 6.05% |

Waste Tonnage Per Person

Studies by the U.S. Environmental Protection Agency have documented a 4.3-pound per day average waste product generation in the U.S. as of 1997. Not included in the 4.3 pounds are C&D waste or commercial restaurant/facility waste. Type III facilities accept the C&D waste. The municipally collected or equivalent private vendor collection of retail, office and restaurant/hotel waste is an added demand for Type I waste disposal.

The Jefferson Parish Sanitary Landfill serves primarily Jefferson Parish. In 2001, the Jefferson Parish Sanitary Landfill accepted 541,189 tons or 6.51 pounds per day per resident. Jefferson also has C&D waste included in the 6.5 pounds per resident. Very little of this tonnage came from other parishes. Jefferson is an affluent parish with higher consumption rates of goods and services than most other areas. Jefferson is the site for over 50% of the retail shopping area in the entire metro area. Jefferson is the site of the largest concentration of convenience fast food and volume oriented table serve restaurants in the region. The higher tonnage per person in Jefferson is consistent with the economic components of Jefferson Parish.

The River Birch Landfill accepts waste from up to 13 parishes although most of its tonnage comes from Orleans, St. Charles, St. John, Terrebonne, St. Bernard and Lafourche. The average waste tonnage per person per day received at River Birch in 2001 was 5.69 pounds per person. Little of this waste was C & D category waste. The diversion of more waste tonnage to River Birch from Woodside and other sites is beginning to occur in 2002. The current 2002 tonnage rate may exceed 1 million tons during the 12 months from July 2002 to July 2003.

The combined Jefferson Parish and River Birch pounds per resident in 2002-2003 are estimated to be somewhat less than 6 pounds each per day from all sources.

Studies over time at the River Birch Landfill show 1,700 pounds of waste and soil are being compacted in each cubic yard of filled air space. Soil accounts for about 200 pounds and solid waste about 1,500 pounds per cubic yard. Fresh soil is 12% or more of the cumulative materials in a Type I landfill. It is essential to the operation of a landfill for a large, appropriate soil borrow pit operation to be nearby. Jefferson Parish uses an onsite area, which can be filled later with debris. The nearby 87 acre borrow pit site across Live Oak Blvd from the landfills also can provide soil when excavation within the site poses water table problems. However, the closure of parts of either Jefferson Parish Sanitary Landfill or River Birch will require additional soil areas in the future.

The typical landfill permit allows a 108-foot height in the first lift of the facility. The second lift before closure is allowed to reach 180 feet—a 16 story building height. Each square foot of land area provides airspace of 6.7 cubic yards. Each foot of land area within a landfill containment levee should absorb 10,050 pounds, or 5 tons, of waste over the life of the facility.

Each person in the metro area is generating a gross waste of nearly 6 pounds per day to be sent to a landfill. Each year, the average person would generate about 1.1 tons of debris. Over a 25-year period each resident would require about 5 net square feet of landfill cell area.

Because of the incredible compaction to very high weights per cubic yard of waste, landfills can be confined to small sites. Modern landfills can be operated with little odor or rodent or bird problems. They must be drained properly to allow water to leech from the waste to facilitate maximum compaction. The site's subsoil requires very specific geological conditions and placement of large quantities of clay-based soils as a liner. There must be a large quantity of soil appropriate for daily waste coverage adjoining the site.

The study area appears to have sufficient acreage with appropriate soil conditions and roadway access to support regional waste disposal in the New Orleans area for the next 25 to 50 years.

Between 2000 and 2001 before any diversion from Woodside was occurring solid waste for Colonial, Jefferson Parish and River Birch grew from 2.296 million to 2.356 million tons per year. This 2.5% growth rate in tonnage was consistent with the roughly 2% growth in real income (nominal growth adequate inflation) for that time period and the 0.5% growth in population.

A slow growth in population usually accompanies a slow growth economy with gradual increases in real household income. While retail and food sales often rise by 5% per year unit sales volume rise much more slowly near the growth rate of real income.. Only increases in real income rather than price increases produce more trash each year. Whether U.S. prices continue to rise by only 3% per year in the future is unknown. However a 2% per year rise in real income would be consistent with a long future period of steadily rising prosperity. Every thirty-five years the standard of living of the average person would double in the New Orleans area.

A more rapid growth in demand would require a much faster growth rate in population. Energy consumption has also been on a long term 2% per year rate of increase over the past 30 years. There is usually a linear relationship between energy use and real economic output.

The assumptions about future demand are conservative judgments designed to conform to the history of the past 20 years in the New Orleans area. These assumptions are unlikely to overstate the cumulative supply of waste for landfill placement.

Crucial to these expectations is the maintenance of the current technology for packaging, recycling, waste incineration and American consumption patterns. Changes in packaging to more rapidly biodegradable materials would reduce landfill demand. More voluntary participation in recycling materials would reduce landfill demand. Composting in regional compost locations with a separate pickup/disposal of grass

cuttings would reduce waste tonnage at Type I sites. Reductions in energy costs to low levels would make large-scale incineration with elemental chemical separation possible. It is possible Americans will keep items longer or use bigger containers with less packaging per unit of volume.

None of these possibilities are integrated into the current growth rate of 2.5% per year. It is also possible Americans will become more disposal oriented and uncooperative with composting programs. It is possible energy costs will rise substantially over the next decade making incineration and recycling unattractive and forcing waste disposal trucks to focus on the shortest distance to disposal sites. These outcomes would increase demand at the study area.

Without the Woodside facility in Livingston, the River Birch and Jefferson Parish Sanitary Landfills may be somewhat closer to Hammond and Western St. Tammany than the Belle facility or sites in Hancock County, Mississippi. This study does not assume any waste from the Hammond area or western St Tammany will be sent to Jefferson Parish.

Forecast of Type I Waste Tonnage

Based on a 2.5% growth in tonnage generation by the population in Orleans, Jefferson, St. Charles, St. Bernard, Lafourche, St. John and Terrebonne Parishes between 2002 and 2025 estimates of demand by waste facility were estimated. The Colonial site, Jefferson Parish and River Birch from July 2003 to July 2005 are expected to absorb the much of the current Woodside tonnage. Woodside based on its current capacity will begin closure filling sometime in 2003. (See Table Three).

By sometime in 2005 or earlier the Belle Landfill should be operational assuming the timely granting of DEQ operating permit and Section 404 wetland permit by the Army of Corp of Engineers. The Belle Landfill should absorb all the demand formerly received by Woodside. The Belle Landfill should also capture nearly all the tonnage currently being received by the Colonial Landfill after it reaches full capacity in approximated 2008 (or earlier). An expansion of the Colonial Landfill is possible between 2005 and 2008.

The likelihood of a new landfill being permitted elsewhere in Jefferson, St. Bernard or Orleans is low. Only sites within the hurricane levee system would be possible. There is no pending application in these parishes for a competing landfill at this time.

While Terrebone, Lafourche parishes and St. Mary Parishes would be benefited by lower waste transportation through a local site the only Type I landfill in those parishes closed several years ago. Because of the storm surge risk within the Coastal Zone and the lack of fully completed Category 3 hurricane storm surge levees for almost

all these parishes, it would be difficult to find a site meeting all requirements for permitting. A waste transit facility operated by Terrebonne Parish today combines 6 or 7 municipal truck waste loads into one larger truck for transiting to River Birch. Scattered waste transit sites make the operation of regional landfill sites economically feasible.

Continuation of gradual demand growth from Jefferson at the Parish landfill seems the most probable future outcome. However, the Parish landfill is now being partly consumed by Type III construction waste, which could be more cheaply processed in a separate Type III landfill. The level of demand from all other parishes to River Birch for many years in the future are included in the forecast as the more uncertain event. There are existing long-term contracts from many of these parishes with River Birch.

Table Three
Summary of Estimated Demand (Type I Only)
Net Acres Beyond Current Permitted Area

| | 2003 - 2025 | 2026 - 2050 | Total |
|------------------|-------------|-------------|-------|
| Jefferson Parish | 54 | 114 | 168 |
| River Birch | 68 | 173 | 241 |

Table Three
Forecast of Type I Waste Tonnage
Southeast Louisiana 2002-2050

| Year | Colonial | Kelven | River Birch | Belle | Woodside | Southeast Louisiana Millions of Tons | New Orleans Southshore & Terrebonne/Lafourche Pounds Per Person | New Orleans Southshore & Terrebonne/Lafourche Population |
|-------------------------|----------|--------|-------------|---------|------------|---|---|--|
| 2002 | 291 | 600 | 999 | 0 | 500 | 2,390 | 6.53 | 1,342,290 |
| 2003 | 500 | 611 | 1,025 | 0 | 310 | 2,446 | 6.84 | 1,349,069 |
| 2004 | 575 | 626 | 998 | 225 | 60 | 2,484 | 6.81 | 1,355,881 |
| 2005 | 400 | 592 | 973 | 550 | 0 | 2,515 | 6.29 | 1,362,729 |
| 2006 | 410 | 607 | 997 | 564 | 0 | 2,578 | 6.42 | 1,369,610 |
| 2007 | 420 | 622 | 1,022 | 578 | 0 | 2,642 | 6.55 | 1,376,527 |
| 2008 | 431 | 637 | 1,048 | 592 | 0 | 2,708 | 6.68 | 1,383,478 |
| 2009 | 250 | 653 | 1,074 | 797 | 0 | 2,775 | 6.81 | 1,390,465 |
| 2010 | 0 | 670 | 1,101 | 1,073 | 0 | 2,844 | 6.94 | 1,397,487 |
| 2011 | 0 | 686 | 1,128 | 1,100 | 0 | 2,915 | 7.08 | 1,404,544 |
| 2012 | 0 | 704 | 1,157 | 1,127 | 0 | 2,988 | 7.22 | 1,411,637 |
| 2013 | 0 | 721 | 1,186 | 1,156 | 0 | 3,062 | 7.36 | 1,418,766 |
| 2014 | 0 | 739 | 1,215 | 1,184 | 0 | 3,139 | 7.51 | 1,425,931 |
| 2015 | 0 | 758 | 1,246 | 1,145 | 0 | 3,148 | 7.66 | 1,433,131 |
| 2016 | 0 | 777 | 1,277 | 1,174 | 0 | 3,227 | 7.81 | 1,440,369 |
| 2017 | 0 | 796 | 1,309 | 1,203 | 0 | 3,308 | 7.97 | 1,447,643 |
| 2018 | 0 | 816 | 1,341 | 1,233 | 0 | 3,390 | 8.12 | 1,454,953 |
| 2019 | 0 | 836 | 1,375 | 1,264 | 0 | 3,475 | 8.29 | 1,462,301 |
| 2020 | 0 | 857 | 1,409 | 1,295 | 0 | 3,562 | 8.45 | 1,469,685 |
| 2021 | 0 | 879 | 1,445 | 1,328 | 0 | 3,651 | 8.62 | 1,477,107 |
| 2022 | 0 | 901 | 1,481 | 1,361 | 0 | 3,742 | 8.79 | 1,484,567 |
| 2023 | 0 | 923 | 1,518 | 1,395 | 0 | 3,836 | 8.96 | 1,492,064 |
| 2024 | 0 | 946 | 1,556 | 1,430 | 0 | 3,932 | 9.14 | 1,499,599 |
| 2025 | 0 | 970 | 1,595 | 1,466 | 0 | 4,030 | 9.32 | 1,507,172 |
| Total tons | 3,277 | 17,928 | 29,474 | 23,240 | 870 | 74,788 | | |
| Capacity | 3,225 | 6,500 | 15,000 | 45,000 | closed '04 | 69,725 | | |
| Needed Capacity | | 11,428 | 14,474 | -21,760 | 0 | 4,141 | | |
| Additional Acres Needed | | 54 | 68 | 0 | 0 | 122 | | |
| Gross Acres | | 65 | 85 | | | 150 | | |
| Tonnage 2026-2050 | | 24,250 | 39,863 | 36,642 | 0 | 100,755 | | |
| Acres Required | | 114 | 173 | 70 | 0 | 357 | | |
| Gross Acres 2026-2050 | | 142 | 216 | 84 | 0 | 442 | | |
| Gross acres 2002-2050 | | 207 | 301 | 101 | 0 | 592 | | |

Demand Conclusion

Between 2002 and 2025 the Jefferson Parish Sanitary Landfill should absorb 54 net acres excluding buffer zone, roadway and cell levees beyond its current permitted capacity (see Table Three). The Type I River Birch Landfill should absorb 68 net acres between 2002 and 2025 beyond its current capacity. The Jefferson Parish Sanitary Landfill should require the additional acreage to be available for use by 2009. Similarly the River Birch Type I landfill should have the new permitted capacity available by 2016.

Based on the conservative assumption of no further growth in waste tonnage demand after 2025 due to new technology in packaging disposal of recycling waste or the introduction of a yet unknown competing landfill in St. Charles or Terrebonne or Lafourche or Orleans or St. Bernard there would still be a need for 114 net additional acres at Jefferson Parish and 173 net acres at River Birch of Type I Landfill. These estimates assume use of 180-foot heights on the new acreages, which may not prove to be appropriate.

Predicting any further demand is fraught with uncertainty.

Within the study area the existing 200 foot required buffer of vacant land for landfills should be enhanced by locating commercial, manufacturing and service facilities along Highway 90 and Live Oak Blvd. These additional transition land uses can provide further employment opportunities, while increasing the distance of the landfill from the roadway. A 500-foot wide parcel of M-1 zoned land is recommended along Highway 90 covering 110 acres. A 300-foot deep parcel of C-1 zoned property is recommended for frontage on Live Oak and the junction with Highway 90. These C-1 parcels total 51 acres within the study site area.

The use of 161 acres for non-landfill use (110+51) is accompanied by an internal buffer of about 177 acres using a 200-foot deep strip around the edge of the landfill areas. The 1,905-acre total study area would contain about 18% of its land area in non-landfill uses. A much larger group of parcels surrounding the landfill area would provide additional transitional land uses.

Within the study area the Jefferson Parish Sanitary Landfill is forecast to require approximately 54 gross additional acres between now and 2025. This parcel can be accommodated within their existing overall 635-acre tract. However to lengthen the life of their facility and allow grow room to 2050 additional land adjoining their tract from Delta Security or River Birch or Marsh Investments may be needed. This analyst believes the operation of a separate Type III landfill for construction and industrial waste (C&D waste) to conserve their Type I waste acreage is appropriate.

Table Four identifies the estimated land use requirements within the study area to 2050.

The existing 635-acre site of Jefferson Parish should need additional land area for a Type III site and some growth of the Type I parcel over the next 50 years. The demand for landfill acreage produced herein assumes a height limit of not more than 108 feet on new landfill acreage for Jefferson and a 75-foot limit on existing permits. Increasing the maximum height of the landfill to 180 feet over its entire 600 acres would add substantial capacity not included in this analysis.

The River Birch Type I landfill would need 301 more acres beyond their existing 324-acre site, currently in use and including a 180-foot maximum height. Most of their 461-acres in the southeast portion of the study area will be needed for a Type I municipal waste oriented site. It is also likely a second Type III C&D waste site operated by River Birch will be needed for 100 acres in this southeastern portion of the study area between 2025 and 2050.

The location of one or two additional C&D Type III landfills east of the current proposed River Birch site would place waste with no odor or rodent or bird control component in the portion of the study area nearest to future commercial and existing residential land uses.

Based on this preliminary analysis it is likely none of the 559 vacant acre study area after 2050 would be available for an under estimation of demand allowance for all the solid waste land demand over the next 50 years for the parishes South of Lake Pontchartrain. The parcel containing the inactive sludge disposal site could have to be converted into landfill acreage to meet the current expected land demand. Parts of the Marsh Investments and Delta parcels are likely to be utilized. Most of the River Birch vacant land would be needed for Type I or Type III landfills based on current market trends. The Marsh and Delta sites should be zoned for landfill use as part of the contiguous, consistent uses of the study site. Finding a new site for solid waste within the levee system would be extremely difficult. It is possible changes in technology for packaging and disposal will reduce forecast demand. It is also possible another waste disposal site for Type I waste will be permitted in Orleans or St. Bernard. Alternatively, the small 559 acres of potential landfill acreage not yet permitted may be the site for all future Southshore Type I waste.

Refinements of the demand for solid waste landfill for Jefferson Parish must await the completion of an existing study, including engineering support of that landfill currently underway by CDM consulting.

**Table Four
Summary of Land Use
Study Site**

| | <u>Acres</u> |
|------------------------------------|--------------|
| Inside Study Area | |
| M-1 Industrial | 110 |
| M-2 | 0 |
| M-4 Landfill (Type III C & D Site) | 99 |
| M-4 Landfill (Type I)) | 1,468 |
| M-4 Landfill (Buffer Area) | 177 |
| C-1 (Neighborhood & Commercial) | 51 |
| Total | <u>1,905</u> |

| | |
|---|-----|
| In Use for Landfills | 909 |
| (Jefferson Parish - 488; River Birch - 421) | |

| | |
|---|-----|
| Future Landfill Use | 559 |
| (plus additional lifts on 909 acres in use) | |

Type I Market Demand & Available to 2050

| | <u>Available</u> | <u>Need</u> |
|------------------|------------------|-------------|
| Jefferson Parish | 140 | 168 |
| River Birch | 461 | 241 |

Type III Market Demand & Available to 2050

| | <u>Available</u> | <u>Need</u> |
|------------------|------------------|-------------|
| Jefferson Parish | 0 | 100 |
| River Birch | 220 or less | 100 to 200 |

Commercial Land Use

Currently there are approximately 140 acres zoned commercial (C-1 or C-2 or OW-1) along US Highway 90 or Live Oak not within this study area. The current market likely demanded commercial uses in the area are:

- Storage of equipment, pipe, vehicles
- Recreation vehicle storage
- Convenience stores
- Gasoline/auto services
- Vehicle repair
- Service retail
- Fast food

As single-family development occurs north of Live Oak and east of Modern Farms more commercial land demand will occur. Currently commercial land near the area has a market price near \$1 per square foot or less along US Highway 90.

One proposed zoning layout (see Drawing 1 at the end of this section) allows for 51 acres of C-1 zoned commercial land within the study area and 176 acres of C-2, C-1 or OW-1 zoned land outside the study area. Altogether there would be 229 acres of C-1, C-2 or OW-1 zoned land within the study area or adjoining it.

Typical market development depths for small commercial acres or storage-oriented use are 300 feet. However, much of the existing C-1 and C-2 zoned lands (see Drawing 2 at the end of this section) has depths over 1,000 feet, which are suitable for big box retail and shopping centers.

If grocery uses or other larger commercial uses were attracted to the general area, the existing commercially zoned parcels east and southeast of the study area would be appropriate sites. About 162 total commercial acres should be adequate to meet commercial land needs for the next 50 years near the study area. Addendum A describes the past level of commercial land demand in Jefferson Parish for shopping centers and big box retail. There is currently a need for less than 3 acres per year of commercial land per year over the next 50 years near the study area. The additional 67 acres of commercial land may be absorbed as more residential and industrial development occurs near the study site. This additional land area will provide more long-term buffer area around the study site.

Industrial Land Uses

The current 1.6 million ton per year level of municipal refuse demand for Jefferson Parish and River Birch requires hundreds of truck trips per day over a 305 delivery day year (including Saturdays).

The existing U.S. Highway 90 truck traffic is substantial and growing. Many truckloads originate on the Westbank or with cargo for Westbank firms who use I-310 to cross the Mississippi River and follow Highway 90 to Avondale and beyond (Harvey Canal area). The ongoing upgrading of Highway 90 to Interstate standards will increase truck use of the roadway as well as other vehicle traffic.

Facilities to service, repair and store trucks are a natural market for industrially zoned land along this portion of Highway 90. Repair of trailers is now centralized at yards in East Jefferson, Eastbank St. Charles and Baton Rouge. Trailer repair and bodywork facilities could find locations near the study area appropriate. Truck stops with overnight facilities, food service and minor repair capability are also likely uses.

Light manufacturing of bulky items such as drilling pipe, fluids and oil field related equipment are also likely uses for industrial parcels in the study area. Facilities for sanitation truck services are also natural additions to the solid waste disposal site facilities.

There are far more current industrial uses rather than commercial uses in the study area. It is also possible firms who use recycled paper; glass or plastics could be attracted to the area. Today most of these recycled materials end up being discarded in a Type I or III landfill because of inadequate demand for recycled materials.

The location of recycling facilities near landfills for excess product disposal and industrial land for actual users of the recycled material would offer cost savings to all parties. Currently 125 acres are zoned M-1 or M-2 adjoining the study area. About 110 acres of M-1 parcels would be within the study area. The existing Borrow Pits use 87 acres, which should be zoned M-1 instead of S-1 across from the study area. Two parcels totaling 357 acres near the railroad line and Live Oak also would be best used as M-1 parcels because of their location. A third parcel of 133 acres located on Live Oak across from the study area is also recommended to be zoned M-1.

Minimization of transportation and handling costs are essential for recycling material to be profitably uses in new manufacturing. The employment potential of a 600-acre industrial and manufacturing park with rail, interstate and highway access, close proximity to the River, a cheap raw material base nearby and within hurricane protection levees is very substantial. The entire group of M-1 and M-2 parcels would be larger than the portion of the Elmwood Industrial Park serving warehousing, trucking and light manufacturing.

There is also the need for soil to cover waste material each day. The one 87-acre soil borrow pit site north of the existing landfills will probably need to be expanded to serve all the landfill operations and closure material requirements of the hundreds of acres of landfill in the study area. A portion of the M-1 acreage could provide the needed borrow pit area.

The provision of large tracts of M-1 zoned land near the study site is consistent with current market demand, future synergisms with recyclable materials and the desire to place residential users a distance of at least 1,500 feet from the edge of operating landfills. A long history of studies focusing on sound, sight or smell negative externalities have found few, if any, impacts on residential property more than 1,500 feet from a noise or smell emitting facility.

Table Five summarizes the recommended land use adjoining the study area. Addendum A includes a tabulation of recent land demand in the Elmwood Park, which average 21.5 acres per year from 1989 to 2001. Build-to-suit warehousing for owner-occupants for the metro area absorbed 32 acres per year from 1995 to 2001. Half or more of this demand was in Elmwood. Some of these parcels were within the recently purchased land tabulations for Elmwood and others were not.

Industrial and warehouse land demand of 15 to 20 acres per year within Jefferson Parish is indicative of current market demand.

The 600 acres recommended herein for M-1 or M-2 zoning would allow for 5 acres for warehouse/industrial development per year (250 acres) and another 100 acres of Borrow Pits for landfill closure soil requirements.

There would still be 250 acres available over the next 50 years to serve new recycled material manufacturers, who are not now in the New Orleans area. Determining the actions necessary to attract these firms to the Waggaman area is beyond the scope of this study. However, there are few regional landfill sites in the South with the confluence of features available at the study site for manufacturers using recycled raw materials.

Table Five
Proposed Land Use Adjoining
and Within Study Site

| Zoning Proposed | Acres Inside Study Area | Acres Outside Study Area | Total Acres Depicted |
|-----------------------------|------------------------------------|-------------------------------------|---------------------------------|
| M-1 | 110.0 | 577.5 | 687.5 |
| M-2 | 0.0 | 142.0 | 142.0 |
| M-4 Landfill (Type III C&D) | 99.0 | 0.0 | 99.0 |
| M-4 Landfill (Type I) | 1,468.0 | 40.0 | 1508.0 |
| M-4 Landfill (Buffer Area) | 177.0 | 0.0 | 177.0 |
| C-1 | 51.0 | 85.0 | 136.0 |
| C-2 | 0.0 | 17.0 | 17.0 |
| OW-1 | 0.0 | 74.0 | 74.0 |
| U-1 | 0.0 | 379.0 | 379.0 |
| Total | 1,905.0 | 1,314.5 | 3,219.5 |

Source: Drawing 1: Zoning Study Proposed Layout from Coastal Engineering and
and Environmental, Inc., October 2002

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Addendum A

**Supporting Market Warehouse,
Industrial and Retail Shopping Land Demand**

**Commercial Property Demand
Jefferson Parish and
Potential Share at Waggaman**

| | | Waggaman | |
|--|---|--------------|--------------------------|
| | <u>Elmwood</u> | <u>Share</u> | <u>Annual</u> |
| Commercial Land Sales | 21.5 acres | 5% | 1 acre |
| Warehouse Owner Building | <u>Jefferson</u> 32.5 acres | 5% | 1.6 acres |
| Retail Shopping Center Net Absorption | 90,648 s.f. | 5% | 4,500 s.f. |
| Big Box Retail Land Acres | <u>Market</u> 303,919 s.f. 23.2 acres | 5% | 15,200 s.f. 1.1 acres |

Conclusion:

1. Warehouse/Industrial demand of 1 to 2 acres per year currently.
 2. Commercial land demand of 1 acre per year.
 3. Big box or other large uses, 1 acre per year.
- Total Demand: Commercial: 2 - 3 acres per year.
Warehouse Industrial: 5 acres or less per year.

Elmwood Business Park

| Year | Sales | Gross Square Feet | Price Per Square Foot | Acres |
|-------------------|-------|----------------------|--------------------------|--------|
| 2001 | 1 | 653,400 | \$8.00 | 15.00 |
| 2000 | 1 | 74,052 | \$10.10 | 1.70 |
| 1999 | 2 | 283,140 | \$10.70 | 6.50 |
| 1998 | 6 | 109,853 | \$8.10 | 2.52 |
| 1997 | 17 | 719,740 | \$3.82 ⁴ | 16.50 |
| 1996 | 23 | 1,283,134 | \$3.78 ³ | 29.50 |
| 1995 | 26 | 1,408,998 | \$4.18 | 32.30 |
| 1994 | 15 | 801,873 | \$4.03 | 18.41 |
| 1993 | 16 | 4,492,338 | \$2.34 ² | 103.13 |
| 1992 | 6 | 414,648 | \$3.44 | 9.52 |
| 1991 | 9 | 444,585 | \$2.82 | 10.20 |
| 1990 ¹ | 12 | 1,785,816 | \$2.70 | 41.00 |
| 1989 | 5 | 155,898 | \$4.33 | 3.58 |
| Total | 139 | 12,182,620 | n.a. | 279.70 |
| Average | 10.7 | 937,124 | \$5.27 | 21.51 |

Source: Alvin H. Davis, Latter & Blum Realtors

- 1 Does not include 275 acres transfer from I.C.R.R. to East Jefferson Properties for \$13,013,353
- 2 Includes 61.02 acres sold to Coca Cola for \$2.00 p.s.f. (\$2.85 market average excluding this sale)
- 3 \$5.42 p.s.f. without Gulf State Theater purchase
- 4 \$6.03 p.s.f. without railroad slae of parcel for industrial use

New Construction of Warehouses

| Year | Building | Land (E) | Acres |
|---------|-----------|-----------|-------|
| 1995 | 555,850 | 1,852,800 | 42.5 |
| 1996 | 160,059 | 533,530 | 12.3 |
| 1997 | 197,855 | 642,850 | 14.8 |
| 1998 | 829,224 | 2,764,080 | 63.5 |
| 1999 | 662,544 | 2,208,480 | 50.7 |
| 2000 | 260,000 | 866,666 | 19.9 |
| 2001 | 311,400 | 1,038,000 | 23.8 |
| Total | 2,976,932 | 9,906,406 | 227.5 |
| Average | 425,276 | 1,416,058 | 32.5 |

Source: Max J. Derbes Inc. Realtors
Acreage estimated based on 0.3 floor
area ratio

Share to Waggaman area - 5%
Demand per year - 1.6 acres

Freestanding Retail Construction

| Year | Stock | Absorption |
|------------|-----------|------------|
| 2001 | 8,621,000 | 1,084,400 |
| 2000 | 7,537,000 | (232,628) |
| 1999 | 7,769,000 | (200,000) |
| 1998 | 7,969,000 | 433,200 |
| 1997 | 7,535,800 | 273,000 |
| 1996 | 7,262,800 | 178,000 |
| 1995 | 7,084,800 | 249,850 |
| 1994 | 6,835,950 | 594,500 |
| 1993 | 6,241,450 | 354,950 |
| 1992 | 5,886,500 | n.a. |
| Absorption | | 2,735,272 |
| Annual | | 303,919 |

Note: Stock adjusted upward by approximately 500,000 feet for Schwegmann freestanding stores not counted until 1998

Source: New Orleans and South Central Gulf Real Estate Market Analysis, 1993 to 2002.

New Orleans Retail Absorption Rates by Parish
Shopping Centers Only

| | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 |
|-------------|----------|----------|-----------|-----------|---------|-----------|-----------|-----------|----------|
| Market | 204,780 | 232,566 | 1,152,304 | (2,712) | 225,638 | (44,696) | (80,039) | (75,559) | 149,422 |
| Jefferson | 132,724 | 187,408 | 583,175 | 55,541 | 78,448 | 170,197 | (260,183) | (136,004) | 4,529 |
| Orleans | 69,410 | 11,169 | 374,810 | (249,175) | 52,324 | (154,091) | 186,124 | (148,176) | 121,628 |
| St. Tammany | (14,011) | (44,782) | 153,509 | 149,158 | 87,966 | (66,549) | (34,113) | 266,180 | 67,287 |
| St. Bernard | 16,657 | 78,771 | 40,810 | 41,764 | 6,900 | 5,747 | 19,500 | (64,254) | (33,744) |

Note: Excludes Freestanding Big Box Merchants

| | Jefferson | Market |
|------------------|-----------|---------|
| Average Per Year | 90,648 | 195,745 |
| Share | 46% | 100% |

Source: New Orleans & South Central Gulf Real Estate Market Analysis

Addendum B
Credentials of Analyst

SUMMARY OF CREDENTIALS

Wade R. Ragas PhD, MAI

Education

Doctorate in Business Administration (Real Estate and Urban Analysis) from the Ohio State University, 1976

Masters in Business Administration, University of New Orleans, 1971

Bachelor of Arts in Economics, University of New Orleans, 1969

Professional Certifications or Honors

Endowed Research Professorship in Real Estate Finance, UNO, 1991

Senior Residential Appraiser (SRA) 1984, Senior Real Estate Analyst (SREA), 1990

Member Appraisal Institute (MAI), 1991

Weimer Post Doctoral Fellow, Homer Hoyt Institute, 1991-92

Certified General Appraiser, Louisiana 1990 #0043

Research Fellow, Texas A&M Real Estate Center, 1993

Professional Associations

Society of Office and Industrial Realtors, Academic Associate

Appraisal Institute, SRA, SREA, & MAI

American Real Estate and Urban Economics Association

Employment Summary

Endowed Research Professor in Finance, 1991-current

Director of Real Estate Market Data Center, 1982-current

Full Professor of Finance, University of New Orleans, 1986-current

Assoc. Prof of Finance, University of New Orleans, 1980-1986

Asst. Prof. of Finance, University of New Orleans, 1976-1980

Doctoral Research Fellow, Ohio State University, 1973-1975

Assistant Vice-President, Pringle-Associated Mortgage Corporation, 1972-1973
(mortgage and construction lending)

Assistant Vice-President, Smolkin-Siegel Corporation, 1971-1972
(national real estate market research)

Reviewer

Irwin Books AIREA Dryden Press Wiley, Inc.

Question contributor and reviewer Education Testing Service ASI, Inc.

Ad hoc reviewer, *Journal of the American Real Estate and Urban Economics Association*, and *Economic Development Quarterly*, *Journal of Real Estate Research*

Member, Board of Reviewers, Review of Financial Economics (1993-1996),
Professional Report of the Society of Industrial and Office Realtors

Education/Instruction Experience

Video course for 45 hours instruction in Real Estate Principles, broadcast every semester, included 550 Power Point visuals (Spring 1997- current)

Video course for 45 hours of instruction in Real Estate Investment , broadcast Fall and Spring with 450 Power Point Visuals and analysis spreadsheet/templates(Fall 1998-current)

Monthly public television informational broadcast of 30 minutes duration on issues of interest to consumer and real estate professionals called Real Estate Trends (WLAE TV New Orleans Aug. 1996-Aug. 1997)

Undergraduate, graduate and doctoral instruction in real estate finance, investments, site and market feasibility analysis, and real estate valuation annually 1974-1999

Chairperson of two doctoral dissertations

SREA Courses 102 & 101, national administrative instructor, (17 sites nationally 1978-1991), SREA Course 201 national administrative instructor;

Appraisal Institute approved instructor Residential and Commercial Courses (210 and 310), selected to teach Course 210 nationally.

Short courses on Condominiums, Energy Efficient Housing, Residential Valuation, Owner Financing, Wetlands, Appraisal, Louisiana and Gulf Coast Real Estate Markets, Appraisal Standards, Digital Technology and the Real Estate Industry, Property Management offered throughout Louisiana and, selectively, nationally. National Outstanding Seminar award of the National Assoc. of Realtors Education Foundation in 1993 for Wetlands Seminars. Total adult audience members exceed 25,000 persons.

Member, Academic Liaison Committee of American Institute of Real Estate Appraisers 1983-1985 (national)

SREA committee on recertification, national, 1988-89
Author, SREA Louisiana certification materials, 1991

Appraisal Foundation Qualification Board task-force on appraisal examination content (national); task force on review of course materials, 1989-1990 (national)

Residential Continuing Education and Seminars, Chairperson (national) Appraisal Institute 1990-91 Residential Education Board, (national), Appraisal Institute, 1990-1991.

Contractor to Appraisal Qualifications Board (national) to advise on process for reviewing and evaluating state certification exams, 1990

Research and Publications Committee (national), Society of Industrial and Office Realtors (1991-1998)

Publications

Applied Residential Property Valuation, 1981, 1983 Society of Real Estate Appraisers (30,000 copies used in the training of residential appraisers from 1981 to 1991)

Chapter author in Office Development Handbook (ULI, 1998, ch.2) on Market and Financial Feasibility Analysis and recurring market analyses for Urban Land Institute.

Author or co-author of over 30 articles in national publications (provided upon request) including: Journal of Real Estate Research, Journal of Real Estate Finance and Economics, Land Economics, Economic Development Quarterly, Appraisal Journal, Real Estate Review, Real Estate Appraiser and Analyst, Professional Report of SIOR, Tierra Grande, Review of Financial Economics, Environmental Watch

Annual author of New Orleans Real Estate Market Analysis (a 100+ page semiannual review of residential and commercial market conditions on the Gulf Coast distributed to 800 subscribers nationally) 1978 to 1999 (30 volumes)

Board of Directors or Advisors

Mutual Savings and Loan, Metairie, La. 1984-current.

Rummel High School Development Committee and Blue Ribbon Committee (94-98)

University of New Orleans Research Park Development Committee (93-98)

Chair of College of Business Bldg. Committee (\$15 million project, 1995)

Historic Restorations Inc., (advisory bd 1995-1997), developer of apartments and hotels

New Orleans Apartment Assoc. (1995-1997)

Louisiana Realtors Education Foundation (1996-97)

Willwood Foundation Development Board (1997-99) (Multifamily Housing)

Chairperson 1999

Willwood Community Board of Trustees (2000) (oversight of WLAE television and 2,000 multifamily units)

Valuation Assignments

Wide range of property types including office buildings, multifamily housing, subdivisions, hotels, Miss. River batture, golf courses, large vacant tracts and mixed use development, manufacturing facilities, condominiums, timeshares, single-family houses and trailer parks. Assignments have included opinions of market value, market feasibility and land use plan analyses, externality impact analyses, reviews of appraisals, investment analyses and 404 permit needs assessments. Clients include law firms, domestic and foreign commercial banks, savings and loans, RTC, FDIC, Gulf Oil, Purina Mills, Southern Pacific Railway, Exxon, Chevron, Joseph C. Canizaro Interest, Browning Ferris Industries, Texaco, Army Corp of Engineers, Jefferson Parish and numerous private property owners

Expert witness for FDIC and RTC for large commercial loans in ten states from 1989 to 1995 covering over one billion in loans. Expert opinions on valuations, anti-trust geographic market analysis, wetland litigations, large scale development (including land use plans), environmental externalities, S&L Board of Director responsibilities, going

concern business valuation. Mortgage backed bond market analyses (six issues from 1984 to 1994)

Property Valuation Oriented Articles and Books

Textbooks

Ragas, W. Applied Residential Property Valuation. Society of Real Estate Appraisers (1981, revised 1982, 1984.), Chicago. (required text for all residential appraisers for SRA designation nationally from 1983 to 1991)

Peer Reviewed Publications

Ragas, W. "Vacancy in Space City: Houston's Office Scene." Tierra Grande. Vol. 2, No. 1, (Spring 1994), 14-15.

Ragas, Wade R. "CBD Land Values and Multiple Externalities." Land Economics, Vol. 3, No. 4, (November 1987).

Ragas, Wade R. "Timeshares Inflation Expectations and Market Value." Appraisal Journal, Vol. LIV (2), (April 1987), 246.

Ragas, Wade R. "Addendum to Historic Properties." Real Estate Appraiser and Analyst. (July-August, 1980), 36 and Note, (September-October, 1980).

Ragas, Wade R. and Miestchovich, Ivan J. "Historic Properties and Tax Incentives: New Opportunities for the Investor and New Challenges for the Appraiser." Real Estate Appraiser and Analyst, (May, June, 1980), 9-13.

Ragas, Wade R. and Miestchovich, Ivan J. "Historic Preservation and the 1976 Tax Reform Act." The Appraisal Journal, (January 1978), 44-52.

Monograph

Ragas, Wade; Davis, Alvin; and Harrison, Patricia. "Real Estate Sale-Leaseback: A Review of Advantages and Disadvantages." Monograph for the Society of Industrial and Office Realtors, (1994), 100 pages.

Property Valuation Projects

1. Large tracts of mixed use property - East Baton Rouge, Jefferson, Orleans and St. Tammany Parishes, Louisiana.
2. Regression models of housing values and externalities (Baton Rouge, 8,000 houses; Jefferson: 2,600 houses; St. Bernard: 2,000 houses; Monroe: 800 houses; Shreveport: 1000 houses, Orleans 4200 houses)
3. Commercial vacant sites or office parks (Baton Rouge, Jefferson, Orleans, St. Tammany).
4. Hotels in New Orleans, Baton Rouge, Biloxi.
5. Going Concern Business valuations including a large scale developer, subdivision developer, realtor, contractor.
6. Multifamily properties in New Orleans area and Biloxi, Mississippi.
7. Warehouse/industrial properties in West Baton Rouge, New Orleans and Plaquemines Parish, Louisiana.
8. Golf courses on Mississippi Gulf Coast and Jefferson Parish, Louisiana.
9. Office buildings in New Orleans CBD and Jefferson Parish.
10. River batture properties in Jefferson, Orleans and Plaquemines Parishes.
11. Anti-trust market analyses and damage estimates for retail gas stations; jewelry and animal food products industries.
12. Subdivision analyses, single family houses or condominiums in St. Tammany, Jefferson, Orleans St. Bernard Parishes, East Baton Rouge and Harrison County Mississippi.
13. Historic structures in Orleans, East Baton Rouge and St. Tammany Parishes.
14. Retail facilities in Jefferson and Orleans Parishes.
15. Complex retrospective appraisals of large tracts of vacant land.
16. Environmentally impaired properties in Orleans, East Baton Rouge, West Baton Rouge Jefferson and Plaquemines Parishes.

Selected Appraisal Reviews in the Course of Litigation

Office Buildings: Los Angeles; Dallas; Houston; Kansas City
Condominiums: Honolulu; Vail, Co.; New Orleans; Idaho; Corpus Christi, Galveston & Dallas, Tx.; Washington, D.C.; Lafayette, La.; Baton Rouge, La.
Office Parks: San Francisco, Ca.; Baton Rouge, La.; Lafayette, La.
Hotels: Dallas, Tx.; Baton Rouge, La.; New Orleans, La.; Biloxi, Miss.; Lafayette, La.
Large Tracts: Hilton Head, S.C.; New Orleans, La.; Baldwin Co., Ala.

Valuations with Wetland Issues

Jefferson Parish parcels near Crowne Pointe of 1300 acres with multiple land uses outside of the hurricane protection levee system for an act of donation.

Jefferson Parish parcels west of Barataria Blvd inside and outside of the hurricane protection levees (two 100 acre parcels) in the course of litigation.

Jefferson Parish parcel adjoining a proposed golf course within the hurricane protection levee as part of wetland 404 permit needs assessment.

Jefferson Parish parcels West of Lafitte-Larose Highway within the hurricane protection levee system (approximately 120 acres with mixed uses) in the course of litigation.

Master land plan and valuation of 3000 acres south of the V Levee in Jefferson Parish in the course of litigation with the Environmental Protection Agency.

Open marsh parcel and canal system in Lafourche and Terrebonne Parishes as part of complex litigation of property rights.

Environmental Need or Land Use Impact Studies

Articles

1. Flower, P. and Ragas, W. "The Effects of Refineries on Neighborhood Property Values." Journal of Real Estate Research, Vol. 9, No. 3 (1994), 319-338.
2. Ragas, W. and Flower, P. "Refineries and Neighborhood Housing Values." Texas Real Estate Center Technical Report 1018, Vol. 54, No. 4 (April 1994), 17 pages.
3. Ragas, W. and Speyrer, J. "Housing Prices and Flood Risk: An Examination Using Spline Regression." The Journal of Real Estate Finance and Economics, Vol. 4, No. 4 (December 1991), 395-407.
4. Ragas, W. and Loeb, D. "Impact of the Federal Wetlands Act on Real Estate." Texas Real Estate Center Technical Report 964 (January 1993).
5. Ragas, W. and Flower, P. "Petroleum Refineries – Can Larger Site Buffers Limit Adjacent Property Value Impacts?" Professional Report of the Society of Industrial and Office Realtors (October 1994).
6. Ragas, W. and Loeb, D. "Wetland Determination from the Buyer's and Seller's Views." The Society of Industrial and Office Realtor Perspective, Vol. 38 (1993).
7. Ragas W. and Argote, D. "Valuation of Office Buildings Containing Friable Asbestos." Environmental Watch. Chicago, Ill.: Appraisal Institute (Spring 1991).

Seminar

8. "Wetlands and the Effects on the Real Estate Industry" for the Louisiana Real Estate Commission, 1992 Statewide Seminar, 13 sites (national award as Outstanding Seminar by a Mid-sized State awarded by National Assoc. of Realtors.)

Recent Studies: 1996-1999

1997-99

1. Land use master plan for Jefferson Parish covering 9,000 acres of West Jefferson for Jefferson Parish
2. Chemical Plant Explosion and Residential Property Values in Sterlington, Louisiana.
3. Rain Induced Street Flooding and Property Valuation Impacts on the Lower Coast of Algiers for Lafayette Insurance.
4. Residential Property Valuations and Proximity to an Existing EPA Approved Solid Waste Disposal Site. Funding by Browning Ferris Industries (in process).
5. Neighborhood Property Values and the Inner Harbor Navigation Canal, Orleans Parish
6. Needs Assessment for Master Wetland Permit, 4200 acres in Jefferson Parish (draft)
7. Needs Assessment and Costs Benefit Analysis of the extension Hickory Blvd in Jefferson Parish

Recent Studies: 1997 - 1999 Continued

8. Economic needs, market demand and land use plan for the Cortana Mall as part of the retroactive master wetland permit
9. Property value diminishment due to zoning restrictions of a Mississippi River Batture Parcel in Jefferson Parish
10. Property Value diminishment analysis of a Mississippi River Batture parcel in Jefferson parish.
11. Housing valuation patterns in relation to a Cresote Plant in Bossier Parish, La

Forthcoming

12. Industrial Canal Inner Harbor Lock and Neighborhood Property Values (1970-1997) draft
13. Industrial Canal Inner Harbor Lock and Neighborhood Property Values (1994-1998) draft
14. Master Land Plan with Zoning and Public Infrastructure recommendations for the Elmwood Industrial Park in Jefferson Parish
15. Analysis of housing values in relation to petrochemical facilities in Baton Rouge, La
16. Oil and gas exploration facilities and nearby property values in Pointe Coupee, La.

1996

1. Market Demand Needs Assessment, Land Plan and Opinion of Market Value for the Bayou Aux Carpes Tract of 2,400 acres in the Barataria Corridor of Jefferson Parish
2. Market Demand and Needs Assessment for a 500 Acre Golf Course Community Known as Estelle Plantation in the Barataria Corridor of Jefferson Parish.
3. Market Demand, Opinion of Market Value and Land Plan for a Large Residential Tract Within the Hurricane Protection System of Jefferson Parish for Dr. and Mrs. Zaslow.
4. Market Demand Analysis and Opinion of Market Value for Several Parcels Along Barataria Blvd. in Jefferson Parish for several property owners.
5. Review of Consulting Opinions on Property Valuation Impacts for Residential Property Near a Superfund Site in Livingston Parish.
6. Neighborhood property value and parcel analysis for houses with foundation deficiencies in Jefferson Parish

Pre 1996

1. Studies of rain induced street flooding and property values (published)
2. Study of friable asbestos and office building value (published)
3. Explosion and plume effect on industrial property
4. Petrochemical facilities and residential property values (published)
5. Multiple externalities and commercial land values in a CBD (published)

Market Analyses

Published Articles or Book Chapters

1. Book chapter author: "Office Market and Financial Feasibility Analysis." Handbook of Office Development. Urban Land Institute (1998, chapter Two)
2. Ragas, W. "Vacancy in Space City: Houston's Office Scene." Tierra Grande, Texas A&M University, Vol. 2, No. 1 (Spring 1994).
3. Ragas, W.; Lacho K.; Miestchovich, I.; Nebel, E.; and Ryan, T. "Louisiana Superdome: Costs and Benefits 1975 - 1985." Economic Development Quarterly (August 1987) 222-239.
4. Ragas, W. and Miestchovich, I. New Orleans and the Gulf South Market Analysis. Vol. I to XXI (1978 to 1995), UNO Real Estate Market Data Center (100+ page study covering southeast Louisiana, coastal Mississippi and Alabama, sold by subscription nationally).
5. Ragas, W. New Orleans and Gulf South Market Analysis. Vol. XXII to XXX(1996 to 1999).
6. Ragas, W. "New Orleans Metropolitan Area Market Conditions." Urban Land Institute Market Profiles (1993, 1994, 1995, 1996, 1997, 1998). Distributed internationally.
7. Ragas, W.; Ryan, R. and Grissom, T. "Forecasting Office Space Demand and Office Space per Worker Estimates." Professional Report of the Society of Industrial and Office Realtors. Vol. 51, No. 2 (March/April 1992).

Seminar

8. "New Orleans Economy and Real Estate Market Forecast," 1991 to 1999 annually, 400-600 attendees.
9. "Real Estate Market Trends" for the Louisiana Real Estate Commission, 1994 and 1996. Statewide at 10 sites each year.

Market Analysis: Indicative Consulting Opinions and Studies from 1992 to 1998

1. Land Use Plan for 9,000 acres of the Barataria Corridor for the Jefferson Parish Council.
2. 500+ Acre Mixed Use Vacant Parcel in the Jefferson Highway Area of East Baton Rouge Parish (with land plan).
3. 1,200 acre Vacant Marshland and Wetland Parcel in Jefferson Parish.
4. 2,400 Acre Vacant Parcel in Jefferson Parish, Mixed Use Analysis and Land Plan.
5. Cortana Mall in Baton Rouge market demand analysis
6. UNO Research Park Land Plan, zoning analysis, market demand for lodging
7. Analysis of Hickory Avenue extension on the Elmwood Industrial Park
8. Housing Demand related to the siting of a new Causeway Bridge across Lake Pontchartrain.

Market Analysis: Indicative Consulting Opinions and Studies from 1992 to 1998

9. Office Market Forecast in the New Orleans CBD for an Owner of Several Class A Office Towers.
10. Going Concern Business Valuation and Market Analysis for a Collection of Apartment and Hotel Properties in the New Orleans CBD, French Quarter and Warehouse District.
11. Three Mixed Use Commercial and Residential Developments in Western St. Tammany (Land Valuation Opinion).
12. Commercial / Industrial Tract with One Mile of River Batture in Orleans Parish (and Valuation Opinion).
13. Identification of Large Vacant Parcels Suitable for Industrial Development in Jefferson, Orleans, St. Bernard and Plaquemines Parishes (approximately 20,000 acres analyzed.) for the Louisiana Department of Economic Development
14. Market Analysis, Appraisal Reviews and Underwriting Standards Violations Analysis for the Resolution Trust Corp. and the FDIC for Properties in 10 States Covering Over \$1 Billion in Assets Under Litigation Involving Several Financial Institutions (1987-93)
15. Batture and land side usage, market demand for a pipeline and terminal facility in Plaquemines Parish including opinion of market value.
16. Parking garage market study and feasibility analysis, French Quarter of New Orleans
17. Multifamily feasibility and market study for a historic property in Fauburg-Marigny
18. Going Concern Business Valuation and Market Analysis for a subdivision developer
19. Batture Land market analysis in Jefferson Parish
20. Market Analysis and Land Use Recommendations for the Elmwood Office Industrial Park in Jefferson Parish (in process)
21. Master Wetland Permit market analysis and land use recommendations for Jefferson Parish for 4,000 acres in West Jefferson

Pre 1992 Studies

Market and financial analyses of apartments, condominiums, office buildings and single-family developments in New Orleans, Mississippi Gulf Coast, Houston, Iowa, Illinois, Minnesota, Michigan, Ohio, Texas/Mexican border, Kentwood, La.

Technologically Oriented Articles and Software

Peer Reviewed Publications

Ragas, Wade R. "Operant Conditioning – Application Problems of the Technology to Business Organizations." Bulletin of Research, (October, 1974), Columbus, Ohio: Ohio State University.

Ragas, W. and Richard, Golden. "Digital Convergence and Technological Change in Commercial Real Estate." Professional Report of SIOR, (Fall 1997).

Practitioner Peer Review

Ragas, Wade R. "Research/Technology Parks and the Role of Universities." Journal of the National Association of Research Parks, (Summer 1991).

Ragas, Wade. "University-Related Research Parks – Business Center for the 90's and Beyond." Professional Report of Society of Industrial and Office Realtors, Vol. 50, No. 4, (1991), 7-9.

Ragas, Wade R. and Wyatt, J. "Residential Energy Capitalization Technique and Single-Family Home Underwriting." Real Estate Appraiser, (January 1978), 13-16.

Continuing Education Seminars

Real Estate Market Trends for the Louisiana Real Estate Commission, Summer 1994, statewide, 10 sites and repeatedly in the New Orleans area with extensive visuals

Digital Convergence and Technological Change in Real Estate, Louisiana Real Estate Commission, statewide seminar, 1998.

Software Commercial Copyrights

Ragas, Wade R and Trinh, Thong, New Orleans Housing History and Appraisal Data Service, CD Rom, Visual Basic, 1998(copyrighted) and leased to subscribers.

Ragas, Wade R. and Wong, Julio, Internal housing record support software in Visual Basic 1998

Ragas, Wade R. and Fatemi, Farshad. REDS, a commercial property database and analysis written in DBASE, 1994.

Ragas, Wade R. and Richard, Golden. Copyrighted software: Comps-Extract, a single family appraisal and data management program, written in C, 1989.

Ragas, Wade R. and Richard, Golden. Copyrighted software: CPS, a commercial property database and analysis program written in C, 1989. Modified 1992, 1994, 1997

Ragas, Wade R. copyrighted software UNO COMPS, New Orleans Housing History, supporting data entry, editing and geocoding software written in Visual Basic 5. 1998.

Technologically Advanced or Complex Presentations

1. Host and producer of Real Estate Trends, Public Television show, monthly 1996-97.
2. Instructor and designer of two semester length television video courses each having 400 to 550 Powerpoint visuals for a real estate principles and real estate investments courses broadcast three times per year since 1997 to students in seven parishes.
3. Two ten city presentations of Digital Technology and Real Estate (1998) and Property Management (1999) using a multimedia computerized portable presentation system.
4. Numerous presentations with complex visuals before domestic and foreign groups of 20 to 500 persons.
5. Developed CD ROM housing databases and software covering 250,000 housing transactions with complete physical attribute descriptions and geocoding
6. Author, designer and producer of subscription publication for real estate professionals sold nationally semi-annually from 1980 to 1999 with primary data covering 10,000 houses, 50,000 apartments, 50 million feet of warehousing, 30 million feet of retail and 30 million feet of office space.
7. Courtroom testimony in Federal District Court and parish district court using computer projection
8. Testimony before U.S. Senate select committee on immigration, Louisiana legislative committees, Louisiana Board of Tax Appeals, parish councils, city councils, zoning boards, RTC advisory committee

GSE

GSE GundSeal[®] Geomembrane Supported Geosynthetic Clay Liner (GCL)

GSE GundSeal composite liner is the only geosynthetic clay liner (GCL) that combines the high swelling and sealing characteristics of bentonite clay with the low permeability of a polyethylene geomembrane. No other single geosynthetic clay liner offers these combined product attributes. GundSeal consists of approximately 1.0 lb/ft² (4.9 kg/m²) of high quality sodium bentonite adhered to a geomembrane. This composite liner allows the installer to conveniently roll out a blanket of clay, replacing or supplementing compacted clay that may be required for liner and cap systems. The polyethylene geomembrane backing for the GundSeal GCL is available in thicknesses ranging from 12 mil (0.3 mm) up to 80 mil (2.0 mm) and may be textured for improved slope stability.

Properties of GSE GundSeal GCL

| PROPERTY | TEST METHOD | VALUES |
|--|---------------------------------|---------------------------|
| Bentonite Coating, minimum, lb/ft ² (kg/m ²) | GSE QC/QA Procedures | 1.0 (4.9) |
| Hydraulic Conductivity: GundSeal, maximum, m ³ /m ² ·sec | ASTM D 5887 | 4 x 10 ⁻¹⁴ |
| Effective Hydraulic Conductivity: Geomembrane, maximum, m/s | ASTM E 96 | 7 x 10 ⁻¹³ |
| Hydraulic Flux: Bentonite, maximum, m ³ /m ² ·sec | ASTM D 5887 at 5 psi (34.5 kPa) | 5 x 10 ⁻¹¹ |
| Hydraulic Flux: Overlapped Seam, maximum, m ³ /m ² ·sec | ASTM D 5887 at 5 psi (34.5 kPa) | 5 x 10 ⁻¹¹ |
| Wet/Dry Cycles, maximum, 10 cycles | ASTM D 5887 at 5 psi (34.5 kPa) | No Effect on Permeability |
| Freeze/Thaw Cycles, maximum, 4 cycles | ASTM D 5887 at 5 psi (34.5 kPa) | No Effect on Permeability |

Properties of polyethylene geomembrane used in the production of GSE GundSeal GCL

| | | Smooth Geomembrane ¹ | | | Textured Geomembrane ¹ | |
|--|-----------------------|---------------------------------|-----------|-----------|-----------------------------------|-----------|
| | | | | | | |
| Thickness, minimum, mils (mm) | ASTM D 751/1593/5199 | 11 (0.28) | 18 (0.46) | 54 (1.35) | 27 (0.68) | 54 (1.35) |
| Density, minimum, g/cm ³ | ASTM D 792/1505 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |
| Tensile Properties, minimum ² | ASTM D 638, Type IV | | | | | |
| Strength at Break, lb/in-width (N/mm) | Dumbell, 2 ipm | 35 (6) | 58 (10) | 243 (43) | 38 (7) | 75 (13) |
| Strength at Yield, lb/in-width (N/mm) | | 20 (3.5) | 33 (5.9) | 130 (23) | 65 (11) | 130 (23) |
| Elongation at Break, % | G.L. = 2.5 in (64 mm) | 400 | 400 | 560 | 120 | 120 |
| Elongation at Yield, % | G.L. = 1.3 in (33 mm) | 10 | 10 | 13 | 13 | 13 |
| Puncture Resistance, minimum, lb (N) | FTMS 101, Method 2065 | 16 (71) | 26 (115) | 80 (356) | 38(169) | 80 (356) |

Properties of bentonite used in the production of GSE GundSeal GCL

| | | |
|-------------------------------------|----------------|----|
| Montmorillonite Content, minimum, % | X-ray Analysis | 90 |
| Fluid Loss, maximum, ml | ASTM D 5891 | 18 |
| Free Swell, minimum, ml | ASTM D 5890 | 24 |

¹12% adjusted moisture content

²Available in thicknesses ranging up to 80 mil (2.0 mm). See specific GSE geomembrane product data sheets for additional information.

³The combination of stress concentrations due to coextrusion texture geometry and the small specimen size results in large variation of test results. Therefore, these tensile properties are minimum average roll values.

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GSE Lining Technology, Inc.
Corporate Headquarters
19103 Gundlie Road
Houston, Texas 77073
USA
800-435-2008, 281-443-8544
FAX: 281-475-6010

GSE Lining Technology GmbH
European Headquarters
Buckshuder Strasse 112
D-21073 Hamburg
Germany
49-40-767-420
FAX: 49-40-767-42-33

Sales/Installation Offices
Australia
Egypt
Singapore
United Kingdom

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DS 012 RC3/05/98

**A COST/BENEFIT ANALYSIS FOR THE
EXPANSION OF THE RIVER BIRCH
LANDFILL**

Prepared by:

**TIMOTHY P. RYAN, Ph.D.
DEAN
COLLEGE OF BUSINESS ADMINISTRATION
UNIVERSITY OF NEW ORLEANS**

JULY, 2003

INTRODUCTION

This report estimates benefits and costs related to the proposed expansion of the River Birch landfill in Jefferson Parish. The benefits part of the analysis will include the one-time construction benefits of the project as well as the on-going operating benefits to the community of the project once it is open.

The major economic benefit of the expansion of the landfill for the New Orleans metropolitan area will be the extension of the life of the landfill. The expansion will not change the current economic conditions (either positive or negative) to any great extent. The expansion will, however, extend the life of the landfill from 2014 to 2050. At the current rate of usage, the existing landfill, which is the major landfill for the entire New Orleans metropolitan area of 1.4 million people, will run out of usable space in 2013. At that point, if nothing is done, the costs of removing solid waste will increase for all citizens, businesses, and governments in the New Orleans area.

This report will be divided into two parts -- the first will be the impact of the construction spending on the local area economy; the second will be the benefit/costs analysis of the on-going operations of the expanded landfill. As part of the benefits during both the construction and operating phases of the project, this report will estimate total direct spending in the area economy, total secondary spending, total spending (direct plus secondary), total employment, and total state and local tax revenue that will be generated by the project.

IMPACT OF CONSTRUCTION SPENDING

The current proposal calls for the construction of the expanded landfill over a forty-year period from 2003 to 2042. Table 1 presents the total spending that will result from the construction by year. The total dollar value of the primary, or direct, spending of this construction project will be \$57.17 million over the construction phase of the project (See Table 1).

A COST/BENEFIT ANALYSIS FOR THE
EXPANSION OF THE RIVER BIRCH
LANDFILL

Prepared by:

TIMOTHY P. RYAN, Ph.D.
DEAN
COLLEGE OF BUSINESS ADMINISTRATION
UNIVERSITY OF NEW ORLEANS

JULY, 2003

TABLE 1

Total Landfill Expansion Direct Capital Spending
(In millions)

| <u>Year</u> | <u>Soft Costs</u> | <u>Materials</u> | <u>Construction</u> | <u>Total</u> |
|-------------|-------------------|------------------|---------------------|--------------|
| 2002 | \$- | \$- | \$- | \$- |
| 2003 | \$- | \$- | \$- | \$- |
| 2004 | \$- | \$- | \$- | \$- |
| 2005 | \$- | \$- | \$- | \$- |
| 2006 | \$0.66 | \$0.57 | \$1.33 | \$2.55 |
| 2007 | \$2.01 | \$1.74 | \$4.07 | \$7.82 |
| 2008 | \$0.02 | \$0.02 | \$0.04 | \$0.07 |
| 2009 | \$(0.51) | \$(0.44) | \$(1.03) | \$(1.99) |
| 2010 | \$0.52 | \$0.45 | \$1.05 | \$2.02 |
| 2011 | \$0.19 | \$0.17 | \$0.39 | \$0.76 |
| 2012 | \$0.21 | \$0.18 | \$0.43 | \$0.82 |
| 2013 | \$(0.52) | \$(0.45) | \$(1.05) | \$(2.03) |
| 2014 | \$(0.52) | \$(0.45) | \$(1.05) | \$(2.03) |
| 2015 | \$- | \$- | \$- | \$- |
| 2016 | \$- | \$- | \$- | \$- |
| 2017 | \$- | \$- | \$- | \$- |
| 2018 | \$- | \$- | \$- | \$- |
| 2019 | \$1.11 | \$0.96 | \$2.24 | \$4.31 |
| 2020 | \$1.50 | \$1.29 | \$3.02 | \$5.81 |
| 2021 | \$0.75 | \$0.65 | \$1.52 | \$- |
| 2022 | \$- | \$- | \$- | \$- |
| 2023 | \$- | \$- | \$- | \$- |
| 2024 | \$- | \$- | \$- | \$- |
| 2025 | \$1.41 | \$1.22 | \$2.85 | \$4.37 |
| 2026 | \$1.12 | \$0.97 | \$2.27 | \$4.37 |
| 2027 | \$- | \$- | \$- | \$- |
| 2028 | \$- | \$- | \$- | \$- |
| 2029 | \$- | \$- | \$- | \$- |
| 2030 | \$- | \$- | \$- | \$- |
| 2031 | \$- | \$- | \$- | \$- |
| 2032 | \$- | \$- | \$- | \$4.28 |

TABLE 1 (Continued)

Total Landfill Expansion Direct Capital Spending
(In millions)

| <u>Year</u> | <u>Soft Costs</u> | <u>Materials</u> | <u>Construction</u> | <u>Total</u> |
|-------------|-------------------|------------------|---------------------|--------------|
| 2033 | \$1.10 | \$0.95 | \$2.22 | \$4.28 |
| 2034 | \$- | \$- | \$- | \$- |
| 2035 | \$- | \$- | \$- | \$- |
| 2036 | \$- | \$- | \$- | \$- |
| 2037 | \$1.04 | \$0.90 | \$2.11 | \$4.06 |
| 2038 | \$1.04 | \$0.90 | \$2.11 | \$4.06 |
| 2039 | \$- | \$- | \$- | \$- |
| 2040 | \$- | \$- | \$- | \$- |
| 2041 | \$1.76 | \$1.52 | \$3.55 | \$6.83 |
| 2042 | \$1.76 | \$1.52 | \$3.55 | \$6.83 |
| 2043 | \$- | \$- | \$- | \$- |
| 2044 | \$- | \$- | \$- | \$- |
| 2045 | \$- | \$- | \$- | \$- |
| 2046 | \$- | \$- | \$- | \$- |
| 2047 | \$- | \$- | \$- | \$- |
| 2048 | \$- | \$- | \$- | \$- |
| 2049 | \$- | \$- | \$- | \$- |
| 2050 | \$- | \$- | \$- | \$- |
| Total | \$14.72 | \$12.73 | \$29.71 | \$57.17 |

Note: Totals may not add due to rounding.

Source: New Orleans Landfill Expansion Proposal

This direct spending produces additional spending in the local economy. This is called secondary spending and is an important part of the economic impact. Secondary spending is a multiple of the direct spending since it is caused by the direct spending. This multiple is called the *net economic multiplier*, or more simply the *multiplier*. The multiplier that is used depends on the industry involved and the area that the spending occurs. (Source: Regional Multipliers: A User Handbook for the Regional Input-Output Modeling System (RIMS II), 1999.) Table 2 presents the secondary spending related to the construction of the expanded landfill. The total dollar value of the secondary spending of this construction project will be \$45.20 million over the construction phase of the project (See Table 2).

TABLE 2

Total Landfill Expansion Secondary Capital Spending
(In millions)

| <u>Year</u> | <u>Soft Costs</u> | <u>Materials</u> | <u>Construction</u> | <u>Total</u> |
|-------------|-------------------|------------------|---------------------|--------------|
| 2002 | \$- | \$- | \$- | \$- |
| 2003 | \$- | \$- | \$- | \$- |
| 2004 | \$- | \$- | \$- | \$- |
| 2005 | \$- | \$- | \$- | \$- |
| 2006 | \$0.64 | \$0.17 | \$1.21 | \$2.02 |
| 2007 | \$1.95 | \$0.53 | \$3.70 | \$6.19 |
| 2008 | \$0.02 | \$0.01 | \$0.03 | \$0.06 |
| 2009 | \$(0.50) | \$(0.14) | \$(0.94) | \$(1.57) |
| 2010 | \$0.50 | \$0.14 | \$0.95 | \$1.60 |
| 2011 | \$0.19 | \$0.05 | \$0.36 | \$0.60 |
| 2012 | \$0.20 | \$0.06 | \$0.39 | \$0.65 |
| 2013 | \$(0.51) | \$(0.14) | \$(0.96) | \$(1.60) |
| 2014 | \$(0.51) | \$(0.14) | \$(0.96) | \$(1.60) |
| 2015 | \$- | \$- | \$- | \$- |
| 2016 | \$- | \$- | \$- | \$- |
| 2017 | \$- | \$- | \$- | \$- |
| 2018 | \$- | \$- | \$- | \$- |
| 2019 | \$1.07 | \$0.29 | \$2.04 | \$3.41 |
| 2020 | \$1.45 | \$0.40 | \$2.75 | \$4.59 |
| 2021 | \$- | \$- | \$- | \$- |
| 2022 | \$- | \$- | \$- | \$- |
| 2023 | \$- | \$- | \$- | \$- |
| 2024 | \$- | \$- | \$- | \$- |
| 2025 | \$1.09 | \$0.30 | \$2.07 | \$3.45 |
| 2026 | \$1.09 | \$0.30 | \$2.07 | \$3.45 |
| 2027 | \$- | \$- | \$- | \$- |
| 2028 | \$- | \$- | \$- | \$- |
| 2029 | \$- | \$- | \$- | \$- |
| 2030 | \$- | \$- | \$- | \$- |
| 2031 | \$- | \$- | \$- | \$- |
| 2032 | \$1.07 | \$0.29 | \$2.02 | \$3.38 |

TABLE 2 (Continued)

Total Landfill Expansion Secondary Capital Spending
(In millions)

| <u>Year</u> | <u>Site Costs</u> | <u>Materials</u> | <u>Construction</u> | <u>Total</u> |
|-------------|-------------------|------------------|---------------------|--------------|
| 2033 | \$1.07 | \$0.29 | \$2.02 | \$3.38 |
| 2034 | \$- | \$- | \$- | \$- |
| 2035 | \$- | \$- | \$- | \$- |
| 2036 | \$- | \$- | \$- | \$- |
| 2037 | \$1.01 | \$0.28 | \$1.92 | \$3.21 |
| 2038 | \$1.01 | \$0.28 | \$1.92 | \$3.21 |
| 2039 | \$- | \$- | \$- | \$- |
| 2040 | \$- | \$- | \$- | \$- |
| 2041 | \$1.70 | \$0.47 | \$3.23 | \$5.40 |
| 2042 | \$1.70 | \$0.47 | \$3.23 | \$5.40 |
| 2043 | \$- | \$- | \$- | \$- |
| 2044 | \$- | \$- | \$- | \$- |
| 2045 | \$- | \$- | \$- | \$- |
| 2046 | \$- | \$- | \$- | \$- |
| 2047 | \$- | \$- | \$- | \$- |
| 2048 | \$- | \$- | \$- | \$- |
| 2049 | \$- | \$- | \$- | \$- |
| 2050 | \$- | \$- | \$- | \$- |
| Total | \$14.26 | \$3.90 | \$27.05 | \$45.20 |

Note: Totals may not add due to rounding.

Source: New Orleans Landfill Expansion Proposal

The direct spending related to the capital part of the landfill expansion project is \$57.17 million. The secondary impact of the direct spending due to the capital spending is equal to a total of \$45.20 million. Combining this with the direct spending produces a total economic impact due to the capital phase of the project of \$102.38 million (See Table 3). This is money that would not have come into the local economy if the project were not to be undertaken. Table 4 presents the total, forty-year impact of the construction of the landfill expansion.

TABLE 3

Total Landfill Expansion Capital Spending
(In millions)

| <u>Year</u> | <u>Soft Costs</u> | <u>Materials</u> | <u>Construction</u> | <u>Total</u> |
|-------------|-------------------|------------------|---------------------|--------------|
| 2002 | \$- | \$- | \$- | \$- |
| 2003 | \$- | \$- | \$- | \$- |
| 2004 | \$- | \$- | \$- | \$- |
| 2005 | \$- | \$- | \$- | \$- |
| 2006 | \$1.29 | \$0.74 | \$2.53 | \$4.57 |
| 2007 | \$3.97 | \$2.28 | \$7.77 | \$14.01 |
| 2008 | \$0.04 | \$0.02 | \$0.07 | \$0.13 |
| 2009 | \$(1.01) | \$(0.58) | \$(1.97) | \$(3.56) |
| 2010 | \$1.02 | \$0.59 | \$2.00 | \$3.61 |
| 2011 | \$0.38 | \$0.22 | \$0.75 | \$1.35 |
| 2012 | \$0.42 | \$0.24 | \$0.82 | \$1.47 |
| 2013 | \$(1.03) | \$(0.59) | \$(2.01) | \$(3.63) |
| 2014 | \$(1.03) | \$(0.59) | \$(2.01) | \$(3.63) |
| 2015 | \$- | \$- | \$- | \$- |
| 2016 | \$- | \$- | \$- | \$- |
| 2017 | \$- | \$- | \$- | \$- |
| 2018 | \$- | \$- | \$- | \$- |
| 2019 | \$2.18 | \$1.25 | \$4.28 | \$7.72 |
| 2020 | \$2.94 | \$1.69 | \$5.77 | \$10.40 |
| 2021 | \$- | \$- | \$- | \$- |
| 2022 | \$- | \$- | \$- | \$- |
| 2023 | \$- | \$- | \$- | \$- |
| 2024 | \$- | \$- | \$- | \$- |
| 2025 | \$2.22 | \$1.27 | \$4.34 | \$7.82 |
| 2026 | \$2.21 | \$1.27 | \$4.34 | \$7.82 |
| 2027 | \$- | \$- | \$- | \$- |
| 2028 | \$- | \$- | \$- | \$- |
| 2029 | \$- | \$- | \$- | \$- |
| 2030 | \$- | \$- | \$- | \$- |
| 2031 | \$- | \$- | \$- | \$- |
| 2032 | \$2.17 | \$1.25 | \$4.25 | \$7.66 |

TABLE 3 (Continued)

Total Landfill Expansion Capital Spending
(In millions)

| <u>Year</u> | <u>Soft Costs</u> | <u>Materials</u> | <u>Construction</u> | <u>Total</u> |
|-------------|-------------------|------------------|---------------------|--------------|
| 2033 | \$2.17 | \$1.24 | \$4.25 | \$7.66 |
| 2034 | \$- | \$- | \$- | \$- |
| 2035 | \$- | \$- | \$- | \$- |
| 2036 | \$- | \$- | \$- | \$- |
| 2037 | \$2.06 | \$1.18 | \$4.03 | \$7.26 |
| 2038 | \$2.06 | \$1.18 | \$4.03 | \$7.26 |
| 2039 | \$- | \$- | \$- | \$- |
| 2040 | \$- | \$- | \$- | \$- |
| 2041 | \$3.46 | \$1.99 | \$6.78 | \$12.22 |
| 2042 | \$3.46 | \$1.99 | \$6.78 | \$12.22 |
| 2043 | \$- | \$- | \$- | \$- |
| 2044 | \$- | \$- | \$- | \$- |
| 2045 | \$- | \$- | \$- | \$- |
| 2046 | \$- | \$- | \$- | \$- |
| 2047 | \$- | \$- | \$- | \$- |
| 2048 | \$- | \$- | \$- | \$- |
| 2049 | \$- | \$- | \$- | \$- |
| 2050 | \$- | \$- | \$- | \$- |
| Total | \$28.98 | \$16.63 | \$56.76 | \$102.38 |

Note: Totals may not add due to rounding.

Source: New Orleans Landfill Expansion Proposal

TABLE 4

Total Forty-Year Landfill Expansion Capital Spending
(In millions)

| <u>Category</u> | <u>Direct</u> | <u>Secondary</u> | <u>Total</u> |
|-----------------|---------------|------------------|--------------|
| Soft Costs | \$14.72 | \$14.26 | \$28.98 |
| Materials | \$12.73 | \$3.90 | \$16.63 |
| Construction | \$29.71 | \$27.05 | \$56.76 |
| Total | \$57.17 | \$45.20 | \$102.38 |

Note: Totals may not add due to rounding.

Source: New Orleans Landfill Expansion Proposal

The construction activities will create new jobs in the New Orleans area. That employment is of several types. First, there are the employees of the construction, professional services, and financial services firms. Second, there is the employment that is created by the spending that the construction and related firms and their employees make in the local area.

The Bureau of Economic Analysis estimates employment multipliers for the various industries in the RIMS II publication cited above. The employment multipliers capture both the primary and secondary employment effect of the new construction and related spending. Table 5 presents the employment impact of the construction activities, by year.

TABLE 5**Total Landfill Expansion Construction Related Jobs**

| <u>Year</u> | <u>Soft Costs</u> | <u>Materials</u> | <u>Construction</u> | <u>Total</u> |
|-------------|-------------------|------------------|---------------------|--------------|
| 2002 | - | - | - | - |
| 2003 | - | - | - | - |
| 2004 | - | - | - | - |
| 2005 | - | - | - | - |
| 2006 | 19 | 7 | 30 | 55 |
| 2007 | 58 | 21 | 91 | 170 |
| 2008 | 1 | 0 | 1 | 2 |
| 2009 | (15) | (5) | (23) | (43) |
| 2010 | 15 | 6 | 23 | 44 |
| 2011 | 6 | 2 | 9 | 16 |
| 2012 | 6 | 2 | 10 | 18 |
| 2013 | (15) | (6) | (24) | (44) |
| 2014 | (15) | (6) | (24) | (44) |
| 2015 | - | - | - | - |
| 2016 | - | - | - | - |
| 2017 | - | - | - | - |
| 2018 | - | - | - | - |
| 2019 | 32 | 12 | 50 | 93 |
| 2020 | 43 | 16 | 67 | 126 |
| 2021 | - | - | - | - |
| 2022 | - | - | - | - |
| 2023 | - | - | - | - |
| 2024 | - | - | - | - |
| 2025 | 32 | 12 | 51 | 95 |
| 2026 | 32 | 12 | 51 | 95 |
| 2027 | - | - | - | - |
| 2028 | - | - | - | - |
| 2029 | - | - | - | - |
| 2030 | - | - | - | - |
| 2031 | - | - | - | - |
| 2032 | 31 | 12 | 50 | 93 |

TABLE 5 (Continued)

Total Landfill Expansion Construction Related Jobs

| <u>Year</u> | <u>Soft Costs</u> | <u>Materials</u> | <u>Construction</u> | <u>Total</u> |
|-------------|-------------------|------------------|---------------------|--------------|
| 2033 | 31 | 12 | 50 | 93 |
| 2034 | - | - | - | - |
| 2035 | - | - | - | - |
| 2036 | - | - | - | - |
| 2037 | 30 | 11 | 47 | 88 |
| 2038 | 30 | 11 | 47 | 88 |
| 2039 | - | - | - | - |
| 2040 | - | - | - | - |
| 2041 | 50 | 19 | 79 | 148 |
| 2042 | 50 | 19 | 79 | 148 |
| 2043 | - | - | - | - |
| 2044 | - | - | - | - |
| 2045 | - | - | - | - |
| 2046 | - | - | - | - |
| 2047 | - | - | - | - |
| 2048 | - | - | - | - |
| 2049 | - | - | - | - |
| 2050 | - | - | - | - |
| Total | 420 | 156 | 664 | 1,240 |

Note: Totals may not add due to rounding.

Source: New Orleans Landfill Expansion Proposal

TABLE 6

Total Landfill Expansion Construction Related Income
(In millions)

| <u>Year</u> | <u>Soft Costs</u> | <u>Materials</u> | <u>Construction</u> | <u>Total</u> |
|-------------|-------------------|------------------|---------------------|--------------|
| 2002 | \$- | \$- | \$- | \$- |
| 2003 | \$- | \$- | \$- | \$- |
| 2004 | \$- | \$- | \$- | \$- |
| 2005 | \$- | \$- | \$- | \$- |
| 2006 | \$0.48 | \$0.12 | \$0.76 | \$1.35 |
| 2007 | \$1.46 | \$0.36 | \$2.34 | \$4.15 |
| 2008 | \$0.01 | \$0.00 | \$0.02 | \$0.04 |
| 2009 | \$(0.37) | \$(0.09) | \$(0.59) | \$(1.05) |
| 2010 | \$0.38 | \$0.09 | \$0.60 | \$1.07 |
| 2011 | \$0.14 | \$0.03 | \$0.23 | \$0.40 |
| 2012 | \$0.15 | \$0.04 | \$0.25 | \$0.44 |
| 2013 | \$(0.38) | \$(0.09) | \$(0.61) | \$(1.08) |
| 2014 | \$(0.38) | \$(0.09) | \$(0.61) | \$(1.08) |
| 2015 | \$- | \$- | \$- | \$- |
| 2016 | \$- | \$- | \$- | \$- |
| 2017 | \$- | \$- | \$- | \$- |
| 2018 | \$- | \$- | \$- | \$- |
| 2019 | \$0.80 | \$0.20 | \$1.29 | \$2.29 |
| 2020 | \$1.08 | \$0.27 | \$1.73 | \$3.08 |
| 2021 | \$- | \$- | \$- | \$- |
| 2022 | \$- | \$- | \$- | \$- |
| 2023 | \$- | \$- | \$- | \$- |
| 2024 | \$- | \$- | \$- | \$- |
| 2025 | \$0.82 | \$0.20 | \$1.30 | \$2.32 |
| 2026 | \$0.81 | \$0.20 | \$1.30 | \$2.32 |
| 2027 | \$- | \$- | \$- | \$- |
| 2028 | \$- | \$- | \$- | \$- |
| 2029 | \$- | \$- | \$- | \$- |
| 2030 | \$- | \$- | \$- | \$- |
| 2031 | \$- | \$- | \$- | \$- |
| 2032 | \$0.80 | \$0.20 | \$1.28 | \$2.27 |

TABLE 6

Total Landfill Expansion Construction Related Income
(In millions)

| <u>Year</u> | <u>Soft Costs</u> | <u>Materials</u> | <u>Construction</u> | <u>Total</u> |
|-------------|-------------------|------------------|---------------------|--------------|
| 2033 | \$0.80 | \$0.20 | \$1.28 | \$2.27 |
| 2034 | \$- | \$- | \$- | \$- |
| 2035 | \$- | \$- | \$- | \$- |
| 2036 | \$- | \$- | \$- | \$- |
| 2037 | \$0.76 | \$0.19 | \$1.21 | \$2.15 |
| 2038 | \$0.76 | \$0.19 | \$1.21 | \$2.15 |
| 2039 | \$- | \$- | \$- | \$- |
| 2040 | \$- | \$- | \$- | \$- |
| 2041 | \$1.27 | \$0.31 | \$2.04 | \$3.62 |
| 2042 | \$1.27 | \$0.31 | \$2.04 | \$3.62 |
| 2043 | \$- | \$- | \$- | \$- |
| 2044 | \$- | \$- | \$- | \$- |
| 2045 | \$- | \$- | \$- | \$- |
| 2046 | \$- | \$- | \$- | \$- |
| 2047 | \$- | \$- | \$- | \$- |
| 2048 | \$- | \$- | \$- | \$- |
| 2049 | \$- | \$- | \$- | \$- |
| 2050 | \$- | \$- | \$- | \$- |
| Total | \$10.66 | \$2.62 | \$17.07 | \$30.35 |

Note: Totals may not add due to rounding.

Source: New Orleans Landfill Expansion Proposal

The construction phase primary spending will produce an average of 78 new jobs per year for the years in which construction occurs over the next 40 years in the area economy over the construction phase of the project. The construction and related spending will also create an average of \$1.90 million in income (or a total of \$30.35 million) for area residents per year for the period of construction. It must be remembered that these are not permanent jobs and income but exist only during the construction phase (See Table 7).

TABLE 7

Total Landfill Expansion Construction Related Jobs and Earnings
(Earnings in millions)

| <u>Jobs</u> | <u>Average # of Jobs</u> | <u>Average Earnings</u> | <u>Total Earnings</u> |
|--------------|------------------------------|-----------------------------|---------------------------|
| Soft Costs | 26 | \$0.67 | \$10.66 |
| Materials | 10 | \$0.16 | \$2.62 |
| Construction | 41 | \$1.07 | \$17.06 |
| Total | 78 | \$1.90 | \$30.35 |

Note: Totals may not add due to rounding.

Source: New Orleans Landfill Expansion Proposal

When money is spent in the local economy, some of that spending produces tax revenues to State and local governments in the area. The income created by the construction activities produces State income tax revenue, sales tax revenue, and excise tax revenue.

State Tax Collections

Most of the State taxes that are attributable to the construction of the landfill expansion are taxes paid on the income generated by the construction. Out of that income, the recipient is going to pay his State income taxes; in addition, he is going to buy goods and services and pay the taxes that apply to those goods and services. The retail sales tax applies to the purchase of some of those goods and services. Some goods and services, however, are not taxable under the retail sales tax, but are taxable under various other taxes -- such as the gasoline tax, the insurance premium tax, the soft drink tax, the beer tax and the like. These are referred to as excise taxes. The assumption for all of these taxes is that the recipient of this income is no different than the average Louisiana consumer; thus, the proportion of that secondary income that is paid in these various taxes is equal to average values for the State as a whole.

State income taxes that are paid out of this income can be estimated by determining the proportion of his income that the average person in Louisiana pays in State income taxes. Applying this rate to the income generated produces our estimate of State income tax revenue.

To estimate the amount of sales tax revenue that is attributable to the income generated by the project it is necessary to estimate the proportion of income that is spent on taxable commodities in Louisiana. The United States Department of Labor conducts a massive survey

of consumer spending upon which it bases the Consumer Price Index. This survey is called the *Consumer Expenditure Survey* and that source reveals that consumers spent approximately 48.52% of their income on commodities that are taxable under the Louisiana retail sales tax. Applying this proportion to the total income and then applying the sales tax rate of 4% yields the sales tax revenue estimate.

Businesses also receive additional revenues due to the construction. Businesses pay various taxes on their additional revenues – sales taxes on certain purchases, corporate income taxes, and corporate franchise taxes, among others.

Many goods and services are not taxable under the retail sales tax, but are taxable under special taxes, called excise taxes. We should also include these tax revenues in our estimates. The Louisiana taxes that are considered here are: the motor fuel tax, the public utilities tax (here it is assumed that the tax is passed on to consumers), the tobacco tax, the insurance premium tax, the beer and alcoholic beverage tax, the pari-mutuel tax, the soft drink tax, the special fuels tax, and vehicle licenses. Multiplying this rate times the new income produces the estimate of total excise tax revenue.

TABLE 8

Tax Revenue Generated By The Capital Phase Of The Landfill Expansion
(In millions)

| <u>Tax Source</u> | <u>Revenue</u> |
|-----------------------|----------------|
| State Taxes: | |
| Income | \$0.49 |
| Selective Sales | \$0.48 |
| General Sales | \$1.19 |
| Business | \$0.30 |
| Total State Taxes | \$2.47 |
| Local Taxes | \$1.30 |
| State and Local Total | \$3.78 |

Note: Totals may not add due to rounding
Source: Author's Calculations

Thus, in total the River Birch Landfill expansion will generate a total of \$2.47 million in new state tax revenue during the construction phase of the project. This is general fund revenue for the state of Louisiana. In addition, Landfill expansion construction will create \$1.30 million in new tax revenue for local governments in the New Orleans area. In total, state and local governments will collect an additional \$3.78 million as a result of the construction activities associated with the River Birch landfill expansion.

IMPACT OF ON-GOING OPERATIONS

Once the facility is completed, the operations of the River Birch landfill expansion will extend the useful life of the landfill by 36 years. Since the current River Birch landfill is the major landfill for the New Orleans MSA and since permitting a brand new landfill is very difficult, even if suitable land could be found, the proposed expansion of the River Birch facility will allow the entire New Orleans area to retain affordable solid waste disposal. The positive benefit of retaining affordable solid waste disposal impacts residents, businesses, and the community as a whole. Clearly, it affects residents by keeping the costs of solid waste collection low and thereby increases disposable income. It affects businesses by keeping the cost of their waste disposal at or below competitive levels. It affects the community by making New Orleans competitive as a commercial and industrial location, thereby positively affecting economic development.

It is not clear what the actual tipping fee for solid waste would be in the absence of the proposed expansion. It is clear that it would go up – either directly or through increased transportation costs to get the waste to remote facilities. Although it is difficult to predict the future, *some attempt must be made to estimate the future tipping fees without the proposed expansion.* The methodology used in this study to estimate the projected tipping fee is to assume that the New Orleans area tipping fee would equal the southern average tipping fee if no expansion were forthcoming.

Table 9 presents the current tipping fees in the southern states in 2001. Currently, the average tipping fee in the southern states is \$28.94 per ton, slightly above the current River Birch rate of \$28.00 per ton. This is a very conservative estimate in that it doesn't include transportation costs if a remote landfill becomes necessary and because it does not include the costs of building a new landfill, which is generally very expensive. The United States Environmental Protection Agency (EPA) estimated that a new landfill in the state of Louisiana built after 1991 would have a tipping fee of at least \$30.00 per ton (Source: EPA, Organic Materials Management Strategies, July, 1999, p. 9). Thus, the use of \$28.94 is very conservative.

The next step is to forecast the tipping fees to the future. The River Birch landfill has projected a tipping fee that will rise with inflation. The average rate of inflation over the past seven years has been 2.4%. This is the rate that is used to forecast the tipping fee if the proposed expansion is approved. The rate of increase in tipping fees for the alternative scenario will be a market-based fee. It is unclear exactly how the market may react. It is clear that the number of landfills is decreasing substantially over time. According to the EPA, in 1998 there were 7,924 landfills in the United States; in 2000, there were 1,967 (Source: U. S. Environmental Protection Agency, Municipal Solid Waste in the United States, 2000 Facts and Figures, 2002, p. 15). Thus, it is unlikely that the tipping fees will decline in the future. In fact, the situation is such that we can expect a substantial increase in tipping fees in the future.

TABLE 9

Average Tipping Fees by State, 2001

| <u>State</u> | <u>Tipping Fee (\$s per ton)</u> |
|-------------------------|----------------------------------|
| Alabama | \$29.95 |
| Arkansas | \$24.85 |
| Florida | \$38.16 |
| Georgia | \$30.89 |
| Kentucky | \$30.42 |
| Mississippi | \$24.30 |
| North Carolina | \$30.22 |
| South Carolina | \$31.03 |
| Tennessee | \$27.92 |
| Texas | \$21.64 |
| Southern Average | \$28.94 |

Source: Chartwell Information

In 1988, the average tipping fee in Louisiana was \$9.75 (Source: National Solid Waste Management Association, 1988). In 2001, the average tipping fee in Louisiana was \$24.17 (Source: Chartwell Information, 2001). The annual compound growth rate of tipping fees over the 13-year period was 7.23%. We don't expect that rate to continue into the future but we do expect a 3% annual rate of increase (this is Chartwell Information's 2002 estimate.) Table 10 presents the tipping fee estimates for the period from 2002 to 2050, the relevant period for the River Birch facility if expanded.

TABLE 10

Estimated Tipping Fees at River Birch, 2002 - 2050
(Dollars per ton)

| <u>Year</u> | <u>W/Expansion</u> | <u>WO/Expansion</u> | <u>Year</u> | <u>W/Expansion</u> | <u>WO/Expansion</u> |
|-------------|--------------------|---------------------|-------------|--------------------|---------------------|
| 2002 | \$28.00 | \$28.00 | 2027 | \$50.52 | \$62.41 |
| 2003 | \$28.67 | \$28.67 | 2028 | \$51.72 | \$64.28 |
| 2004 | \$29.35 | \$29.35 | 2029 | \$52.96 | \$66.21 |
| 2005 | \$30.05 | \$30.05 | 2030 | \$54.23 | \$68.20 |
| 2006 | \$30.77 | \$30.77 | 2031 | \$55.52 | \$70.24 |
| 2007 | \$31.51 | \$31.51 | 2032 | \$56.85 | \$72.35 |
| 2008 | \$32.26 | \$32.26 | 2033 | \$58.20 | \$74.52 |
| 2009 | \$33.03 | \$33.03 | 2034 | \$59.59 | \$76.76 |
| 2010 | \$33.82 | \$33.82 | 2035 | \$61.02 | \$79.06 |
| 2011 | \$34.63 | \$34.63 | 2036 | \$62.48 | \$81.43 |
| 2012 | \$35.45 | \$35.45 | 2037 | \$63.97 | \$83.88 |
| 2013 | \$36.30 | \$36.30 | 2038 | \$65.50 | \$86.39 |
| 2014 | \$37.17 | \$42.50 | 2039 | \$67.06 | \$88.98 |
| 2015 | \$38.06 | \$43.77 | 2040 | \$68.66 | \$91.65 |
| 2016 | \$38.97 | \$45.09 | 2041 | \$70.30 | \$94.40 |
| 2017 | \$39.90 | \$46.44 | 2042 | \$71.98 | \$97.24 |
| 2018 | \$40.85 | \$47.83 | 2043 | \$73.70 | \$100.15 |
| 2019 | \$41.82 | \$49.27 | 2044 | \$75.46 | \$103.16 |
| 2020 | \$42.82 | \$50.75 | 2045 | \$77.26 | \$106.25 |
| 2021 | \$43.85 | \$52.27 | 2046 | \$79.11 | \$109.44 |
| 2022 | \$44.89 | \$53.84 | 2047 | \$81.00 | \$112.72 |
| 2023 | \$45.97 | \$55.45 | 2048 | \$82.93 | \$116.10 |
| 2024 | \$47.06 | \$57.12 | 2049 | \$84.91 | \$119.59 |
| 2025 | \$48.19 | \$58.83 | 2050 | \$86.94 | \$123.17 |
| 2026 | \$49.34 | \$60.59 | | | |

Source: Author's Calculations

Thus, in 2014, the year that the current landfill will close if not expanded, the alternative tipping fee will be \$42.50 per ton compared to an estimated \$37.17 per ton if it is expanded. By 2050, the tipping fee without expansion will be \$123.17 per ton compared to \$86.94 per ton with expansion. The economic value to the residents of southeast Louisiana will be the lower rates for residential and commercial solid waste collection multiplied by the estimated total amount of solid waste expected. Table 11 presents these estimates.

TABLE 11

Estimated Increase Solid Waste Total Collection Costs, 2002 - 2050
(Millions of \$s)

| <u>Year</u> | <u>Increased Costs</u> | <u>Year</u> | <u>Increased Costs</u> |
|-------------|------------------------|-------------|------------------------|
| 2002 | \$- | 2027 | \$19.40 |
| 2003 | \$- | 2028 | \$21.00 |
| 2004 | \$- | 2029 | \$22.72 |
| 2005 | \$- | 2030 | \$24.55 |
| 2006 | \$- | 2031 | \$26.52 |
| 2007 | \$- | 2032 | \$28.62 |
| 2008 | \$- | 2033 | \$30.87 |
| 2009 | \$- | 2034 | \$33.29 |
| 2010 | \$- | 2035 | \$35.87 |
| 2011 | \$- | 2036 | \$38.62 |
| 2012 | \$- | 2037 | \$41.58 |
| 2013 | \$- | 2038 | \$44.73 |
| 2014 | \$6.31 | 2039 | \$48.10 |
| 2015 | \$6.94 | 2040 | \$51.71 |
| 2016 | \$7.61 | 2041 | \$55.56 |
| 2017 | \$8.34 | 2042 | \$59.67 |
| 2018 | \$9.12 | 2043 | \$64.06 |
| 2019 | \$9.97 | 2044 | \$68.75 |
| 2020 | \$10.87 | 2045 | \$73.76 |
| 2021 | \$11.85 | 2046 | \$79.10 |
| 2022 | \$12.90 | 2047 | \$84.81 |
| 2023 | \$14.02 | 2048 | \$90.89 |
| 2024 | \$15.23 | 2049 | \$97.38 |
| 2025 | \$16.52 | 2050 | \$104.31 |
| 2026 | \$17.91 | | |

Source Author's Calculations

Thus, the increased solid waste disposal costs to the residents and businesses of the New Orleans area of not expanding the River Birch landfill will be the increased tipping fees per ton times the estimated tonnage of solid waste expected. Those costs will be \$6.31 million in 2014 and escalate to \$104.31 million in 2050. A major part of the economic benefits of expanding the landfill will be the elimination of these costs. In addition to the elimination of these solid waste disposal costs, the benefits of expanding the landfill will include the local

spending of landfill operations. This spending includes payments for wages and salaries, local purchases of goods and services, and the like. Table 12 presents the breakdown of this spending for 2002.

TABLE 12

Total Annual Spending Of The Landfill in 2002 \$s
(In millions)

| <u>Category</u> | <u>Primary</u> | <u>Secondary</u> | <u>Total</u> |
|--------------------|----------------|------------------|---------------|
| Wages and Salaries | \$0.84 | \$0.20 | \$1.04 |
| Operating Costs | \$0.96 | \$0.93 | \$1.89 |
| Cover Materials | \$0.35 | \$0.11 | \$0.46 |
| Purchases | \$0.05 | \$0.02 | \$0.07 |
| Total | \$2.20 | \$1.26 | \$3.46 |

* Totals may not add due to rounding.

Source: Author's Calculations.

Thus, the on-going operations of the landfill expansion will generate a total of \$2.20 million in new primary spending and \$1.26 million in secondary spending for a total impact of \$3.46 million on the New Orleans area economy.

EMPLOYMENT AND EARNINGS

As discussed earlier in this report, additional spending in an economy always produces more jobs in the area. In addition to the direct jobs produced by the landfill expansion itself, there are spin-off jobs. In other words, when a visitor spends money in a hotel or restaurant, that spending supports the employment of waiters and busboys at the restaurant. Subsequently, those waiters and busboys spend the income derived from the visitor spending on groceries, for instance. The spending at the grocery store supports the employment of checkers and bagboys at the grocery. This process continues.

Using Bureau of Economic Analysis multipliers as described above, the total employment due to the New Orleans Landfill expansion will be 46, which includes the employment created at

the facility itself and the remaining jobs will be generated in various opportunities in the visitor industry and throughout the rest of the economy.

The Bureau of Economic Analysis also estimates earnings multipliers. These multipliers allow us to estimate the amount of new earnings or income that will be created by the project. Based on those multipliers, the Landfill expansion and the business that it attracts to the New Orleans area will generate a total of \$1.91 million annually in new income for local residents.

TAX REVENUE GENERATED BY THE OPERATIONS OF THE PROJECT

The methodology used to estimate the state and local taxes that will be created by the ongoing operations of the New Orleans Landfill expansion is the same as that used to estimate the tax revenue related to the construction spending, so it will not be repeated. The only difference is that the revenues estimated in this section are recurring. Table 3 lists the revenue raised by the various State and local taxes as a result of the activities of the project.

TABLE 13

Tax Revenue Generated By The Landfill Expansion in 2002 \$s

| <u>Tax Source</u> | <u>Revenue</u> |
|-------------------|----------------|
| State Taxes: | |
| Income | \$31,040 |
| Selective Sales | \$30,225 |
| General Sales | \$37,017 |
| Business | \$19,073 |
| Total State | \$117,354 |
| Local | \$43,957 |
| State Plus Local | \$161,312 |

Source: Author's Calculations

Thus, in total the new Landfill expansion will generate a total of \$117,354 per year in new state tax revenue. This is general fund revenue for the state of Louisiana. In addition, the New Orleans Landfill expansion will create \$43,937 in new tax revenue for local governments in New Orleans area.

The total economic benefits are the sum of the construction benefits, the spending due to the landfill operations, and the reduced solid waste disposal costs that will result from the expansion of the landfill. Since these economic benefits are spread out over a 48-year period of time – from 2002 to 2050 – it is appropriate to discounted present value of the stream of benefits over the 48-year period. The discount rate used is the long-term U. S. government bond rate of 5%. Table 14 presents the present value of direct, secondary, and total benefits.

TABLE 14

Discounted Present Value of Landfill Expansion
(In millions)

| <u>Category</u> | <u>Primary</u> | <u>Secondary</u> | <u>Total</u> |
|-----------------------|----------------|------------------|--------------|
| Wages and Salaries | \$25.88 | \$6.24 | \$32.12 |
| Operating Costs | \$29.58 | \$28.64 | \$58.22 |
| Cover Materials | \$10.78 | \$3.30 | \$14.09 |
| Purchases | \$1.54 | \$0.47 | \$2.01 |
| Increase Tipping Fees | \$422.38 | \$101.79 | \$524.17 |
| Construction | \$18.42 | \$16.77 | \$35.19 |
| Total | \$508.59 | \$157.21 | \$665.80 |

* Totals may not add due to rounding.

Source: Author's Calculations.

In total, the landfill expansion will generate a present value of \$508.59 million in new primary spending and \$157.21 million in secondary spending for a total impact of \$665.80 million for the New Orleans area economy.

Table 15 presents the present value of earnings and the average annual number of jobs that

will be created by the landfill expansion.

TABLE 15

Discounted Present Value of Landfill Earnings and Average Annual Employment
(Earnings in millions)

| <u>Category</u> | <u>Earnings</u> | <u>Jobs</u> |
|-----------------------|-----------------|-------------|
| Wages and Salaries | \$34.81 | 22 |
| Operating Costs | \$21.42 | 43 |
| Cover Materials | \$2.22 | 7 |
| Purchases | \$0.32 | 1 |
| Increase Tipping Fees | \$145.64 | 472 |
| Construction | \$10.58 | 78 |
| Total | \$214.98 | 623 |

* Totals may not add due to rounding.

Source: Author's Calculations.

In total, the expansion of the River Birch landfill will generate an average of 623 jobs per year during the construction and operations phase. The economic activity related to the landfill expansion and reduced solid waste disposal costs will create a total of \$214.98 million in earnings for local residents, in discounted present value.

TABLE 16

Discounted Present Value of Tax Revenue Generated By The Landfill Expansion
(In millions)

| <u>Tax Source</u> | <u>Revenue</u> | |
|-------------------|----------------|--------|
| State Taxes: | | |
| Income | | \$3.50 |
| Selective Sales | \$3.41 | |
| General Sales | \$4.17 | |
| Business | \$2.15 | |
| Total State | \$13.23 | |
| Local | \$4.95 | |
| State Plus Local | \$18.18 | |

Source: Author's Calculations

Thus, in total the new landfill expansion will generate a present value of \$13.23 million in new state tax revenue. This is general fund revenue for the state of Louisiana. In addition, the landfill expansion will create \$4.95 million in new tax revenue for local governments in New Orleans area. The combined state and local new tax revenue created by landfill expansion is \$18.18 million.

COSTS

The costs of the proposed expansion will be discussed in this section. Potential costs include: increased pollution, increased traffic, detrimental affect on surrounding property values, detrimental affect on surrounding roads and highways, and detrimental affect on local residents. Since the expansion will not materially affect operations and volumes at the current site until 2014, there are no short-run costs. A detailed analysis of the adverse effects of the proposed expansion of the River Birch landfill is contained in the "IT Questions" response at Question 1. That report will address the specifics of the adverse effects analysis.

The proposed expansion will be next to a site that has contained a landfill for several years. The expansion will not increase volume in the short run at the current site. Therefore, all potential costs have already been built in to the current landfill site. The potential costs will be addressed one by one.

Increased pollution – From 2002 to 2013, the expansion will not significantly increase volume so no new air, water, or other pollution will occur. After 2014, the expansion will insure that the New Orleans metro area has capacity for solid waste disposal but will not materially increase volume – it will replace the volume at the current landfill, which will be closed in 2013.

Detrimental affect on property value – The location of the current site and the proposed expansion is in an area that has been a landfill for many years. There are no residential neighbors in the vicinity. There are also no commercial neighbors in the vicinity.

Detrimental affect on traffic and on the roads and highways – From 2002 to 2013, the expansion will not significantly increase volume so no increased use of the roads. After 2014, the expansion will insure that the New Orleans metro area has capacity for solid waste disposal but will not materially increase volume – it will replace the volume at the current landfill, which will be closed in 2013.

Detrimental affect on local residents – From 2002 to 2013, the expansion will not significantly increase volume so no increased impacts on local residents at all. After 2014, the expansion will insure that the New Orleans metro area has capacity for solid waste disposal but will not materially increase volume – it will replace the volume at the current landfill, which will be closed in 2013.

CONCLUSION

The proposed expansion of the River Birch landfill will have a significant impact on the New Orleans economy without imposing any new costs on the people or businesses. The proposed expansion will generate a present value of \$508.59 million in new primary spending and \$157.21 million in secondary spending for a total impact of \$665.80 million for the New Orleans area economy. The expansion of the River Birch landfill will generate an average of 623 new jobs per year during the construction and operations phase. The economic activity related to the landfill expansion and reduced solid waste disposal costs will create a total of \$214.98 million in new earnings for local residents, in discounted present value. The new landfill expansion will generate a present value of \$13.23 million in new state tax revenue. This is general fund revenue for the state of Louisiana. In addition, the landfill expansion will create \$4.95 million in new tax revenue for local governments in New Orleans area. The combined state and local new tax revenue created by landfill expansion is \$18.18 million.

The costs of the proposed expansion will be addressed in the "IT Questions" response. Potential costs include: increased pollution, increased traffic, detrimental affect on surrounding property values, detrimental affect on surrounding roads and highways, and detrimental affect on local residents. Since the expansion will not materially affect operations and volumes at the current site until 2014, there are no short-run costs.

In conclusion, the economic benefits of the proposed expansion are significant.

EXECUTIVE SUMMARY

- This report estimates benefits and costs related to the proposed expansion of the River Birch landfill in Jefferson Parish. The benefits part of the analysis will include the one-time construction benefits of the project as well as the on-going operating benefits to the community of the project once it is open.
- The major economic benefit of the expansion of the landfill for the New Orleans metropolitan area will be the extension of the life of the landfill. The expansion will not change the current economic conditions (either positive or negative) to any great extent. The expansion will, however, extend the life of the landfill from 2014 to 2050. At the current rate of usage, the existing landfill, which is the major landfill for the entire New Orleans metropolitan area of 1.4 million people, will run out of usable space in 2013. At that point, if nothing is done, the costs of removing solid waste will increase for all citizens, businesses, and governments in the New Orleans area.
- This report will be divided into two parts -- the first will be the impact of the construction spending on the local area economy; the second will be the benefit/costs analysis of the on-going operations of the expanded landfill. As part of the benefits during both the construction and operating phases of the project, this report will estimate total direct spending in the area economy, total secondary spending, total spending (direct plus secondary), total employment, and total state and local tax revenue that will be generated by the project.
- The current proposal calls for the construction of the expanded landfill over a period from 2002 to 2042. The total dollar value of the primary, or direct, spending of this construction project will be \$57.17 million. The secondary impact of the direct spending due to the capital spending is equal to a total of \$45.20 million. Combining this with the direct spending produces a total economic impact due to the capital phase of the project of \$102.38 million (See Table 3). This is money that would not have come into the local economy if the project were not to be undertaken.
- The construction phase primary spending will produce an average of 78 new jobs per year for the years in which construction occurs over the next 40 years in the area economy over the construction phase of the project. The construction and related spending will also create an average of \$1.90 million in income (or a total of \$30.35 million) for area residents per year for the period of construction. It must be remembered that these are not permanent jobs and income but exist only during the construction phase.
- The River Birch Landfill expansion will generate a total of \$2.47 million in new state tax revenue during the construction phase of the project. This is general fund revenue for the state of Louisiana. In addition, Landfill expansion construction

will create \$1.30 million in new tax revenue for local governments in the New Orleans area. In total, state and local governments will collect an additional \$3.78 million as a result of the construction activities associated with the River Birch landfill expansion.

- Once the facility is completed, the operations of the River Birch landfill expansion will extend the useful life of the landfill by 36 years. Since the current River Birch landfill is the major landfill for the New Orleans MSA and since permitting a brand new landfill is very difficult, even if suitable land could be found, the proposed expansion of the River Birch facility will allow the entire New Orleans area to retain affordable solid waste disposal. The positive benefit of retaining affordable solid waste disposal impacts residents, businesses, and the community as a whole.
- In 2014, the year that the current landfill will close if not expanded, the alternative tipping fee will be \$42.50 compared to an estimated \$37.17 if it is expanded. By 2050, the tipping fee without expansion will be \$123.17 compared to \$86.94 with expansion. The economic value to the residents of southeast Louisiana will be the lower rates for residential and commercial solid waste collection multiplied by the estimated total amount of solid waste expected.
- The total economic benefits are the sum of the construction benefits, the spending due to the landfill operations, and the reduced solid waste disposal costs that will result from the expansion of the landfill. Since these economic benefits are spread out over a 48-year period of time – from 2002 to 2050 – it is appropriate to discounted present value of the stream of benefits over the 48-year period. The discount rate used is the long-term U. S. government bond rate of 5%.
- In total, the landfill expansion will generate a present value of \$508.59 million in new primary spending and \$157.21 million in secondary spending for a total impact of \$665.80 million for the New Orleans area economy.
- The expansion of the River Birch landfill will generate an average of 623 jobs per year during the construction and operations phase. The economic activity related to the landfill expansion and reduced solid waste disposal costs will create a total of \$214.98 million in earnings for local residents, in discounted present value.
- The new landfill expansion will generate a present value of \$13.23 million in new state tax revenue. This is general fund revenue for the state of Louisiana. In addition, the landfill expansion will create \$4.95 million in new tax revenue for local governments in New Orleans area. The combined state and local new tax revenue created by landfill expansion is \$18.18 million.
- Potential costs include: increased pollution, increased traffic, detrimental affect on surrounding property values, detrimental affect on surrounding roads and

highways, and detrimental affect on local residents. Since the expansion will not materially affect operations and volumes at the current site until 2014, there are no short-run costs.

- The proposed expansion will be next to a site that has contained a landfill for several years. The expansion will not increase volume in the short run at the current site. Therefore, all potential costs have already been built in to the current landfill site in the short run.
- A detailed analysis of the adverse effects of the proposed expansion of the River Birch landfill is contained in the "IT Questions" response at Question 1. That report will address the specifics of the adverse effects analysis



June 17, 2003

Mr. Albert J. Ward, Jr., President
River Birch Landfill, Inc.
PO Box 1938
Gretna, LA 70054

Dear Mr. Ward,

I am writing to provide information requested by River Birch Landfill, Inc. (RBL) concerning the viability and benefits of a landfill gas to energy (LFGTE) project associated with RBL's landfill in Jefferson Parish, Louisiana. The following analysis will assess RBL's proposed facility expansion from the standpoint of: A) project and location characteristics that affect the potential for successful LFGTE project implementation and B) the environmental benefits that could be realized if a LFGTE project were implemented in the area of the expanded landfill. As a preliminary matter, we would like to provide some background information concerning Preventive Maintenance Services, Inc. (PMSI) and its involvement in the U.S. EPA's Landfill Methane Outreach Program (LMOP).

PMSI has been an Industry Partner in U.S. EPA's Landfill Methane Outreach Program since 2001. LMOP is a voluntary partnership and technical assistance program that promotes the use of landfill gas as a renewable energy source. By preventing emissions of methane—a potent heat trapping gas—through the development of landfill gas energy projects, LMOP helps businesses, states, and communities protect the environment and build a sustainable future. Currently, there are over 345 operational landfill gas energy projects in the U.S.. These projects are responsible for generating over 1000 megawatts of electricity and another 162,000 cubic feet per minute of landfill methane used in direct use applications. LMOP is providing technical assistance to PMSI to assist with the evaluation of the suitability of a LFGTE project at the River Birch Landfill.



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Project and Location Characteristics of RBL's Expanded Landfill and the Effect of Same on the Potential for a Successful LFGTE Project

PMSI believes the River Birch location has several unique attributes which make it a prime candidate for development of an LFGTE project. In reviewing the preliminary waste data from River Birch and using the EPA LMOP's landfill gas generation and recovery models, the facility has a great opportunity for beneficial use of the landfill gas. In assessing a project's potential for successful implementation of an LFGTE project, two elements are vital: i) a sufficient supply of gas large enough (and of a long enough duration) to encourage the commitment of an end user to the project (via necessary equipment changes, etc.) and, ii) an end user (usually industrial) with energy demands that could be satisfied by the LFG supply, within a 10 mile radius of the source of the LFG. The RBL location and LFG recovery potential satisfies both of these elements, as explained in the following:

PMSI is currently addressing the situation very proactively and as a result of this information and the data from Jefferson Parish landfill we have entered into confidentiality agreements with a potential end user client for further feasibility of their energy savings with landfill gas. This particular Fortune 500 client could consume all the gas currently available from the River Birch facility and Jefferson Parish facility including future expansions for more than ten years.

Additionally, the River Birch facility offers a unique opportunity by its proximity to the Jefferson Parish landfill. No other location in the state of Louisiana offers the characteristics which exist at the RBL site. In fact, according to LMOP eight LFG energy projects in the country utilize LFG from two landfills. These characteristics optimize the potential for successful implementation of an LFGTE project. PMSI is currently preparing a proposal to Jefferson Parish for the beneficial use of their landfill gas.

The attractiveness of (and need for) an LFGTE project has a direct correlation to the price of natural gas. As indicated by the recent press release of the Louisiana Chemical Association, "the price of natural gas in the United States is expected to rise, in the near future, to the point of potentially forcing many LCA members out of business." Thus, the need for the development of LFG direct use projects will only increase in the coming years. The River Birch landfill also offers significant development opportunities with its expansion that other landfills can not offer due to size and location to potential clients.

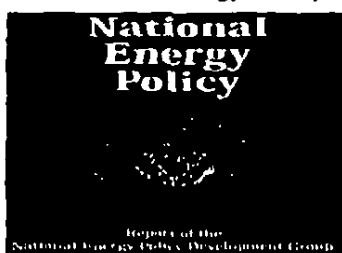


LMOP Industry Partner



There are approximately 2750 active landfills in the United States of which 50% are under the volume of 1,000,000 tons of waste in place. The potential offering of such substantial gas quantities from River Birch makes the economic feasibility significantly greater to the end client, especially if we consider using a Combined Heat and Power (CHP) system at the client's location.

The National Energy Policy of the United States quotes: "



Recommendation:

★ The NEPD Group recommends that the President direct the Administrator of the Environmental Protection Agency to issue guidance to encourage the development of well-designed combined heat and power (CHP) units that are both highly efficient and have low emissions.

Environmental benefits that could be realized if a LFGTE project were implemented

The overall environmental benefits during the life of the expanded RBL facility cannot be fully qualified outside the existing 15 year model. However, the 15 year calculation is a total of 21,426,844,791 cubic feet of methane that could be recovered and utilized. The emissions reductions benefits associated with the combustion of the displaced hydrocarbons would be equivalent to any one of the following annual environmental benefits:

- Taking 53,620 cars off Louisiana's roads
- Planting 73,118 acres of forest
- Preventing the use of 566,688 barrels of oil

With all the considerations we have addressed we can certainly look forward to the potential growth of this beneficial use project and the environmental rewards of utilizing this renewable fuel.

Please let me know how we can assist you further in this development. I look forward to working with you on this beneficial use project.

Sincerely,

David H. Mauney
Preventive Maintenance Services, Inc.



LMOP Industry Partner